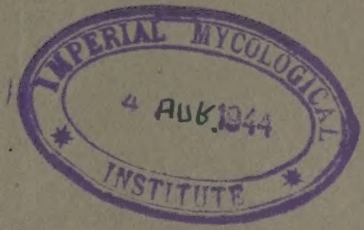


JAMAICA



# ANNUAL REPORT

OF THE

# Department of Agriculture

FOR THE

Year Ended 31st March, 1943

---

*Ordered by His Excellency the Governor to be printed*

---



PRINTED BY  
THE GOVERNMENT PRINTER.  
DUKE STREET, KINGSTON

1944







# CONTENTS

|                                                               | Page |
|---------------------------------------------------------------|------|
| <b>SECTION I—AGRICULTURE IN THE COLONY</b>                    | 1    |
| <b>SECTION II—WORK OF THE DEPARTMENT OF AGRICULTURE</b>       |      |
| <b>General</b>                                                | 4    |
| <b>Public Gardens</b>                                         | 4    |
| <b>Agricultural Experiments, Education and Field Services</b> |      |
| Experiment Station, Hope                                      | 4    |
| Cow Park Nursery                                              | 5    |
| Sugar Cane Experiments                                        | 5    |
| Jamaica School of Agriculture                                 | 5    |
| Government Stock Farm, Hope                                   | 5    |
| Grove Place Stud Farm and Experimental Station                | 5    |
| Livestock Division                                            | 6    |
| Veterinary Division                                           | 6    |
| Plant Disease Inspection                                      | 7    |
| Produce Inspection                                            | 7    |
| Charlton Demonstration Plot                                   | 7    |
| Citrus Development Work                                       | 7    |
| Crop Development Work                                         | 8    |
| Orange River Agricultural Station                             | 8    |
| Newton Farm Agricultural Station                              | 9    |
| Lucky Hill Scheme                                             | 9    |
| Agricultural Centres, Eastern Division                        | 10   |
| Agricultural Operations, Western Division                     | 11   |
| <b>Research and Laboratories</b>                              |      |
| Government Chemist's Division                                 | 12   |
| Agricultural Chemist's Division                               | 13   |
| Entomological Division                                        | 14   |
| Botanical Division                                            | 15   |
| Plant Pathological Division                                   | 16   |
| Banana Leaf Spot Control Division                             | 16   |
| <b>Publications</b>                                           | 17   |
| <b>SECTION III—LEGISLATION</b>                                | 18   |
| <b>APPENDICES</b>                                             |      |
| 1. Agriculture in the Turks and Caicos Islands                | 19   |
| 2. Annual Report of the Sugar Control Board                   | 20   |

*With the Compliments of  
The Director of Agriculture*

*Jamaica,  
W. I.*







# ANNUAL REPORT OF THE DEPARTMENT OF AGRICULTURE FOR THE YEAR ENDED 31st MARCH, 1943

## SECTION I—AGRICULTURE IN THE COLONY

### INTRODUCTION

1. The agricultural policy of the Island has, in conformity both with the immediate needs created by the war situation and a general long-term policy of self-sufficiency, been concentrated on increasing the food supply of the Island. The policy also furthers the basic principle for successful agriculture which has been accepted as a guiding principle in the development of West Indian agriculture, namely, the development and adoption of a system of mixed farming. The majority of major export crops are already well established and therefore the emphasis on food production, both of crops and livestock, tends automatically to introduce a mixed farming basis.
2. The effect of this policy has been for the most part satisfactory in that the supplies of foodstuffs, admittedly supplemented by imports, have been adequate throughout the year. The main difficulty has been to maintain the supply of protein-containing foods which, in the form of rice and wheat-flour, salt-fish and meat have formed the bulk of the food imports during past years.
3. Corn production could not in any way replace corresponding imported materials. The considerable increase in production which has occurred has been offset by a greatly increased consumption resulting from an increase in the number of animals used in draft following the petrol and tyre shortage.
4. Rice production has increased considerably, encouraged by an active demand and high prices. It is unlikely that it can ever meet the full needs of the Island, however. The growers in Westmoreland have successfully organised themselves into an Association and are making satisfactory progress.
5. Large quantities of peas and beans have been produced—more than sufficient for local needs. The production of soya beans is increasing and valuable experience is being gained as to the conditions under which they are likely to be most successful.
6. The banana has provided an invaluable supplement to local food supplies.
7. The effect of the reduction in imports of fish and meat foods plus an increase in wages among certain sections of the community have made unusual demands on the meat supplies of the Island. These demands, coupled with the desire of cattle owners to retain their breeding stock with a view to increasing their herds to meet later requirements and a tendency to transfer from beef to dairy cattle, has resulted in a shortage of meat supplies particularly in the urban areas.
8. A second major factor influencing the agricultural economy of the Island has been the development of bulk purchasing. Such bulk purchasing developed in the first place under the Government Guarantee Scheme for the purchase of food crops. Sale to Government was, however, optional. With the arrangements with the Ministry of Food for the bulk purchase of certain export crops it has been necessary for Government to handle all control of the whole of the production of certain crops. The banana is the principal crop involved, but others such as ginger, pimento and cocoa have also been purchased on this system. The experience gained during the present war period will be invaluable in rationalising production and sale of such produce in the post-war period.
9. The third major factor in the agriculture of the Island is the emphasis which has been placed on soil conservation measures. Easy and cheap methods based on those originally developed in Puerto Rico and adapted to Jamaican conditions are proving successful in so far as moderate slopes are concerned. There is a general appreciation of the problem particularly among certain sections of the small holders' community. Nevertheless the problem still remains a major one and large areas of steeply sloping land are awaiting the development of suitable methods and applications. The Forestry Scheme, which is financed from a grant under the Colonial Development and Welfare Act, 1941, will form a valuable contribution to this work in non-agricultural areas. The Department has also had the opportunity, through the Agricultural Centres scheme, of applying in an extensive practical manner the results of their experiments in soil conservation.
10. A further important study which has arisen out of the use of contour planting is the use of implements on sloping hillsides. The results obtained are promising and should have far-reaching effects on economics of agriculture in the Island.
11. Considerable study has been given to the problem of providing the considerable capital outlay which a change in the general system of agriculture from one of specialised crops to that of mixed farming must necessitate.
12. The Committee appointed to recommend means of improving present tenancy legislation in Jamaica in order that it might conform with that existing in the more advanced agricultural countries reported during the year. The report of the Committee has been published and reprinted in the Journal of the Jamaica Agricultural Society. The recommendations of the Committee are far-reaching and are now being studied and deliberated by those organisations and bodies most directly concerned. This Department was represented on the Committee by a member of the Staff.



## EXPORTS

13. The principal agricultural exports for the year 1942 are as follows:—

|                               | £         | Value.<br>£ |
|-------------------------------|-----------|-------------|
| Sugar and Rum                 |           |             |
| Sugar .. .. .                 | 1,620,994 |             |
| Rum .. .. .                   | 379,633   | 2,000,627   |
| Citrus and Citrus Products    |           |             |
| Oranges .. .. .               | 5,047     |             |
| Orange Oil .. .. .            | 125,662   |             |
| Grapefruit .. .. .            | 2,208     |             |
| Lime juice, raw .. .. .       | 334       |             |
| Citrus Pulp .. .. .           | 309,121   | 442,372     |
| Bananas .. .. .               |           | 273,204     |
| Pimento .. .. .               |           | 212,229     |
| Coconuts and Coconut Products |           |             |
| Coconuts .. .. .              | 93,880    |             |
| Copra .. .. .                 | 27,405    |             |
| Coconut Oil .. .. .           | 270       |             |
| Lard .. .. .                  | 28,535    |             |
| Margarine .. .. .             | 26,962    | 177,052     |
| Coffee .. .. .                |           | 139,727     |
| Ginger .. .. .                |           | 125,213     |
| Cocoa .. .. .                 |           | 106,112     |
| Tobacco, Cigars .. .. .       |           | 94,550      |
| Dyewood and Dyewood Extracts  |           |             |
| Dyewood .. .. .               | 7,542     |             |
| Dyewood Extracts .. .. .      | 77,739    | 85,281      |
| Honey .. .. .                 |           | 30,472      |
| Hides and Goatskins           |           |             |
| Hides .. .. .                 | 1,300     |             |
| Goatskins .. .. .             | 16,011    | 17,311      |
| Annatto .. .. .               |           | 6,518       |
| Bitterwood .. .. .            |           | 193         |
|                               |           | £3,710,861  |

14. In spite of the greatly reduced shipping of bananas the value of the Island's exports showed an increase of approximately £100,000 over those of 1941. The increase has been due, to a great extent, to the purchase of Citrus pulp by the Imperial Government.

## WEATHER

15. Apart from a period of drought during the first three months of 1942, the weather generally has been favourable to agriculture and has been unusually regular throughout the Island. The Island rainfall for 1942 was 99.25 inches, 25.38 inches above the average for 60 years.

## SUGAR AND RUM

16. The total sugar production for 1942 was 155,262.1 tons. The value of sugar exported £1,620,994. The total amount of rum exported, although slightly less in quantity than that for the previous year, was valued at £379,633 as against a total value of £264,675 for 1941.

17. The Imperial Government again purchased the Jamaica sugar crop.

18. Through the favourable geographical position of the Island, Jamaica was able to ship most of the sugar produced.

19. For the 1942 crop the cane farmers supplied 38% of the total quantity of cane ground. The All Island Jamaica Cane Farmers' Association, incorporated by Law in 1941, has become established on a sound footing.

20. Following the general policy advocated by the Comptroller for Development and Welfare in the West Indies, the Sugar Industry has taken over from this Department the responsibility of conducting investigation and research in sugar cane and sugar production. The research policy is controlled by a Committee on which the Department of Agriculture is represented. The Department still controls the introduction of new varieties of sugar cane.

21. Importation and trial of new cane varieties from the British West Indies Sugar Cane Breeding Station continues. Primary importance was given to mosaic resistant varieties.

## BANANAS

22. During the year under review a banana described as the SA1 having potential commercial value and said to be immune to Panama Disease and highly resistant to Leaf Spot Disease was produced by an Officer of the Department. The banana shows promise but further investigation is required before it can be determined if it is a worthy substitute for the Gros Michel or Jamaica Banana.

23. In continuation of the policy of maintaining a sufficient nucleus of the industry to enable production to be developed rapidly once shipping is again available, the Imperial Government guaranteed to purchase a fixed number of stems at the rate of 3/3d. per count bunch, the sum of 3d. per count bunch being deducted to provide for the purchase of materials for the control of Leaf Spot Disease. The Imperial Government guarantee has since been extended to cover purchase of bananas up to June, 1945.

24. The total number of stems purchased for 1942 was 10,150,876.

25. Because of the diversion of shipping for urgent war requirements only 1,347,324 stems were exported at a value of £273,204. Almost the entire amount remaining unshipped was sold locally at a low price and consumed as food.

26. Further progress has been made by the Leaf Spot Mycologist in the investigation of the etiology of Banana Leaf Spot Disease. A modified system of spraying cycles evolved from research investigations is being tried on a field scale throughout the Island. Relationships between soil properties and the intensity of certain types of infection have become apparent.

27. Panama Disease continues to increase rapidly. Control measures have been confined mainly to areas where the incidence is still relatively low. The Agricultural Instructors endeavoured as far as was possible to ensure that control measures were undertaken.

## PIMENTO

28. Exports of pimento for 1942 showed an increase of 731,078 lb. over those for 1941. A total of 3,978,072 lb. valued at £212,229 was exported in 1942 as against 3,246,994 lb. valued at £151,662 in 1941.

29. The Rust Disease of pimento remained static during the year, no serious outbreaks being recorded in new areas.

30. The Jamaica Government arranged to purchase the total pimento crop from growers at a reasonable guaranteed price.

31. There has been a certain amount of pimento leaf oil manufactured during the past year. This product cannot at the moment be exported but it shows promise of having a high priced market for the future.

## CITRUS

32. The Imperial Government arranged to purchase all the citrus pulp produced in Jamaica during 1942. A total of 39,690,051 lb. was exported valued at £309,121. The Department continued to act in an advisory capacity to the citrus pulp manufacturers.

33. In spite of restrictions imposed on the production of orange oil a total of 104,938 lb. was exported, valued at £125,662, this commodity realising an excellent price.

34. The demand for citrus plants continued through the year. Because of transport difficulties it was not possible to distribute as many plants as had been anticipated. Nevertheless, a total of over 55,000 plants was distributed by the Department, growers continuing to show a keen interest in this crop.



## COFFEE

35. A total of 5,305,314 lb. of coffee valued at £139,727 was exported in 1942 as against 4,592,515 lb. valued at £111,903 exported in 1941.

36. The need for the rehabilitation and organization of the Coffee Industry is stressed by adverse reports on the quality of the coffee exported. Provision has been made for the appointment of a Coffee Officer to investigate, determine and establish improved methods of production and processing.

37. The regulations put into effect in 1941 to improve the quality of coffee by requiring that only ripe berries were picked has not had the desired effect and has been circumvented by unscrupulous growers.

## COCOA

38. Cocoa exports showed a slight decrease during the year. The total exports were 4,689,128 lb. valued at £106,112 as against 4,921,548 lb. valued at £90,983 in 1941, cocoa having risen in value during the year. The future prospects of the cocoa industry are more promising.

39. The Department has developed a satisfactory technique for the budding of cacao and arrangements have been made to introduce bud wood of the high yielding strains of cacao which have been developed in Trinidad.

## COCONUTS AND COCONUT PRODUCTS

40. The establishment of the Coconut Control Authority and the Coconut Marketing Board together with the centralisation of processing has greatly stabilised the Coconut Industry in Jamaica.

41. There was a slight decrease in the export of coconuts during the year but the prices obtained were higher than those in 1941. The total of coconuts exported for 1942 was 16,631,896 valued at £93,880 as against 17,134,950 valued at £51,413 exported in 1941.

42. The demand for copra was maintained during 1942 and resulted in a substantial increase in the export of this product, approximately 1,000,000 lb. more being exported than in 1941.

43. There was also a considerable increase in the production of lard and margarine during the year. A total of 826,234 lb. of lard and 858,331 lb. of margarine valued at £28,535 and £26,962 respectively, was exported in 1942 as against 228,779 lb. and 692,614 lb. valued at £6,417 and £17,170 in 1941.

44. Bronze Leaf Wilt Disease continued to cause the loss of many coconut trees on the North West coast of the Island, but was confined to that coastal belt. Insufficient attention to drainage resulting in water-logging caused in other areas yellowing of leaves and a condition mistaken by some growers for bronze leaf wilt infection.

## FOOD PRODUCTION

45. The Food Production campaign controlled by the Food Production Co-ordinating Committee, of which the Director of Agriculture is Chairman, made considerable progress during the year. Mr. Thomas Bradshaw was appointed Food Production Officer in a voluntary capacity. His appointment provides a greater measure of personal contact between the growers and the Food Production Co-ordinating Committee.

46. To provide further contact between the growers and the Committee, 52 local Food Production Committees were formed throughout the island, the members of these Committees serving in a voluntary capacity. The appointment of a Food Production Officer and the establishment of these Committees has greatly aided in the execution of the policy of the Co-ordinating Committee.

47. Owners of properties of over 100 acres have been required to plant 2% of their land area in scheduled food crops, under the Food (Production) Order 1942, and it is estimated that the total area (including large and small properties and tenancies) under food crops is now approaching 200,000 acres.

48. The policy of granting Food Production Loans as crop liens and under other security has been maintained through the Agricultural Loan Banks.

## LIVESTOCK

49. During 1942, forty-three Livestock Improvement Centres were in operation. Livestock owners have continued to make good use of these centres, the number of services at these Centres totalling 13,793 in 1942.

50. Because of transport difficulties it was difficult for the Livestock Field Officers to undertake effective supervision of these centres, and the immediate supervision has been taken over to a great extent by the Field Staff of the Jamaica Agricultural Society.

51. There was a shortage of meat during the year and a Livestock Clearing House was established under the control of the Livestock and Meat Control Advisory Committee. The Clearing House was established in order to control the grading and slaughter of livestock and to maintain an even distribution of meat, at controlled prices, throughout the Island. All butchers were required to be licensed, and were allowed to purchase livestock only when permits had been granted by the Parish Committees of the Jamaica Cattle Owners' Association, which were established during the year, as a concrete means of aid to the Authorities. These measures have to a great extent controlled indiscriminate slaughtering of cattle and the selling of meat through the Black Market.

52. Six Toggenburg Goats were imported by the Department during the year for breeding purposes. The total importation of animals for the year was 4 Bulls, 15 Horsekind, 94 Cattle, 18 Goats and 1 Pig.

53. It is hoped that pure bred stock can be imported in greater numbers in the future for improving the quality of the local breeds of livestock.

54. Animal health as a whole was satisfactory during the year. Internal parasites and pneumonia continued to take a heavy toll. Outbreaks of Anthrax, Swine Fever, and Black Leg were reported but were controlled effectively by Officers of the Veterinary Division and none developed epidemic proportions.

55. The policy of vaccination and immunization by the Department, free or at cost price, has been continued.

## AGRICULTURAL EDUCATION

56. The Jamaica School of Agriculture had an enrollment of 63 students for the year, of whom 26 had received scholarships.

57. The three Practical Training Centres established under the Department of Education continued to concentrate particularly on agriculture. The Rosehall and Chudleigh Settlement Schemes for students progressed satisfactorily.

## JAMAICA AGRICULTURAL SOCIETY

58. The activities of the Society have increased considerably in scope during the year. Transport conditions at the beginning of the year greatly restricted the work of the Instructors of the Society. In view of the importance of the food production campaign the staff of the Society was supplemented by the secondment of the Plant Disease Inspectors and the Produce Inspectors of this Department to the Society. The number of Officers acting as Instructors was thus increased to fifty-four. The number of Supervisors was correspondingly increased to six.

59. The 4-H Club movement has increased in popularity during the year, the number of clubs now totalling 172.

60. The Society and this Department have continued to work in close co-operation.

## AGRICULTURAL CENTRES

61. Fourteen Agricultural Centres have been established in various parishes in the Island with a view to engaging unemployed persons in agricultural work and in food production particularly. The Department has been made responsible for the detailed planning of the agricultural programmes to be effected on these centres. Some 9,000 acres of land are involved, the detailed planning for which has occupied a considerable portion of the time of Senior Officers of this Department. The Commissioner of Lands is responsible for the administration of these centres with the advice of the officers of the Department of Agriculture.



## SECTION II—WORK OF THE DEPARTMENT OF AGRICULTURE

### GENERAL

#### «Crop Development

62. The Department continues to investigate the possible development of new potential commercial crops at the Agricultural Experiment Stations and also at other centres in the Island. Concentration during the past year has been laid mainly on the improvement of permanent crops such as avocado pears and mangoes, and the investigation of new varieties of pulses, of grains, castor oil and sunflower.

63. Because of the difficulty in importing vegetable seed from abroad, the Department has initiated a programme of vegetable seed selection and multiplication in an attempt to supply local demand.

#### Agricultural Experiment Stations

64. The four Agricultural Experiment Stations located at Hope, Grove Place, Newton Farm and Orange River continued to operate during 1942. Experimental work at Hope has been handicapped by the method of operation as a commercial dairy farm. The long range fertiliser experiment with Citrus at Grove Place yielded its fourth crop during the year. Variety trials and fertiliser trials with food crops are in progress at these stations. Emphasis has been laid particularly on the need for soil conservation methods and experiments and examples of planting on the contour, strip planting and the use of barrier grasses on these Stations provided valuable information and has created a considerable amount of interest. The methods adopted for moderate slopes are proving most satisfactory. Much of the work reported by Divisional Officers was carried out on the Stations.

#### Staff

65. The Department continued during the year to be inadequately staffed and I wish to take this opportunity to express my gratitude to all those officers who have continued to undertake so willingly the increased additional duties incurred as a result of the war.

66. I have to record with deep regret the retirement of Dr. Stephen Lockett, the Senior Veterinary Officer, who has served the Department of Agriculture and Jamaica so willingly and assiduously over a great number of years.

67. The following reports, because of paper restrictions, can cover only in briefest form the work of the various divisions during the year. Details and results of experiments cannot be given, but these can always be obtained from the office records and by reference to the Divisional Officers concerned.

### PUBLIC GARDENS

68. Mr. E. J. Downes, Acting Superintendent of Public Gardens, reports as follows:—

69. Mr. M. S. Goodman, Superintendent of Public Gardens, went on leave as from 1st February, 1943, prior to retirement, and I was appointed to carry on his duties.

#### Hope Gardens

70. *Orchids*—The orchid collection has been maintained in a satisfactory condition. During the year 3,154 blooms were displayed in the Orchid House. The collection was enlarged by purchase and gifts from local orchid growers.

71. *Cactus Garden*—The collection of cacti was enlarged by the introduction of a number of new species.

72. *Central Walk*—Approximately 200 ornamental flowering trees were planted in the woodlands along the Central Walk.

73. *Aleurites trisperma*—Plants of Tung oil—*Aleurites trisperma*—which were planted in the nursery have made very satisfactory growth.

74. *Extension to Gardens*—A portion of land approximately one acre in extent, along the western boundary of the Gardens has been cleared and made into lawn.

75. *Repairs to Buildings*—Extensive repairs were carried through on the Orchid House and the Foreman's Office was enlarged.

76. *Distribution of Plants*—A total of 45,680 plants was distributed during the year under review. Of the number 40,630 were sold and 5,050 were free grants. The total amount for plants sold during the year was £488 10s. 0d.

#### King's House Gardens

77. *Flower Garden*—A pergola 84 feet by 14 feet was erected in the centre of the flower garden by the Public Works Department.

78. *Kitchen Garden*—An assortment of fresh vegetables was grown for the domestic requirements of King's House.

79. *Pastures*—The pastures were maintained in a satisfactory condition.

#### Kingston Public Gardens, Castleton Gardens, Hill Gardens, Cinchona, Bath Botanical Gardens and Gordon Town Garden

80. These Gardens were maintained in a satisfactory condition during the year under review.

#### Royal Naval Air Station, Palisadoes

81. Regular visits were made to the Air Station on the Palisadoes to supervise the landscape work of the grounds.

#### Rainfall

82. The rainfall at the various gardens was as follows:—

|       | Hope<br>Gardens | Castleton<br>Gardens | King's House<br>Gardens | Cinchona<br>Hill<br>Gardens | Public<br>Gardens,<br>Kingston |
|-------|-----------------|----------------------|-------------------------|-----------------------------|--------------------------------|
|       | Ins.            | Ins.                 | Ins.                    | Ins.                        | Ins.                           |
| Total | 65.86           | 214.80               | 57.86                   | 157.36                      | 44.76                          |

## AGRICULTURAL EXPERIMENTS, EDUCATION AND FIELD SERVICES

### EXPERIMENT STATION, HOPE

83. Mr. B. F. Topper, Temporary Agricultural Officer reports as follows:—

84. Mr. M. S. Goodman who had been in charge of the Experiment Station for 25 years went on leave on 1st February, 1943, prior to retirement, and I took over his duties.

85. *Weather*—The rainfall during the period under review was high, being 65.86 inches. Spring rains did not, however, fall until the end of May.

86. *Distribution of Cane Varieties*—A total of 57,442 tops was distributed to Cane Farmers from Hope and Cow Park; this is half as much as was distributed last year. Distribution was continued from the Long Pond Cane Nursery, Westmoreland. There was an especial demand for stock feed varieties; the greater part of these went to Stud Stations.

87. *Mosaic Disease Tests*—Twenty seven varieties resistant to Mosaic Disease were compared with that of BH 10/12, in two trials during the period.

88. *Miscellaneous Crops*—The distribution of budded Marsh Seedless Grapefruit, Navel and Valencia orange plants, "Cheese" pineapple suckers, potato, cassava and guatemala grass cuttings was continued.

89. A trial plot of Sea Island Cotton, V 135, planted in early September, was reaped in February and March. An acre in size, it yielded 850 lb., 183 lb. of which was stained. It experienced physiological Boll Shedding, Cutworm, Stainer and Pink Boll Worm attack.



## COW PARK CANE NURSERY

90. Mr. B. F. Topper, Temporary Agricultural Officer, reports as follows:—
91. *Weather*—During the period under review 41.3 inches of rain fell.
92. *Change in Policy*—In the past the Nursery functioned as:—
- (i) A multiplying ground for cuttings received from Trinidad.
  - (ii) A testing ground where varieties which grew very poorly in Observation Plots and showed poor resistance to Mosaic Disease at Hope were discarded.
  - (iii) A distributing ground from which went cane cuttings for Hope Mosaic Trials and Estate Observation Plots.
93. In January it was decided that its first function should remain unchanged, that its second should be stopped and its third function could be slightly altered. In future an average of 12 cuttings of each variety will be sent to each estate, where varieties will be bulked before being put into Observation Plots.
94. *New Varieties Received*—The following new varieties were received from the Plant Quarantine Station, Trinidad:—  
B.39200, B.39157, B.39211, B.39215, B.39220, B.39240, B.39222, B.39223, B.39177, B.39207, B.39229, P.R.900 (2nd instalment)  
C.1017, B.39184, B.39171, B.39157, May. 270, May. 275, Co. 213, Co.290, Co.299, Co.331, Co.352, Co.360, Co.419, Co. 421, Co. 432, Co. 413, and Co. 413.
95. The following varieties were discarded:—  
B.3337, B.34120, B.35221, B.37163, and B.38154.
96. For reference a museum or Reference Plot was begun. Six cuttings of the varieties which were distributed in October, 1941, have been planted in it.
97. *Cotton*—A variety trial planted in September was harvested in February and March. The difference in yield of varieties did not pass the test for significance in the statistical analysis which followed. Varieties may or may not be capable of yielding differently. The varieties were B.D., B.S. 1, M.S. 1, Seabrook, V. 135, V.H. 8, V.H. 9, V.H. 10. From .6 of an acre 646 lb. of cotton were reaped; 1 lb. of this was stained cotton. Aphids and stainers attacked the plot.

## SUGAR CANE EXPERIMENTS

98. Early in the year the Sugar Manufacturers' Association assumed control of all Sugar Cane Experiments.

## JAMAICA SCHOOL OF AGRICULTURE

99. Mr. H. C. Miller, Acting Headmaster, reports as follows:—
100. *Enrolment*—Enrolment during the year averaged 63 Students of whom 26 were recipients of scholarships.
101. *New Students*—107 candidates sat for the entrance examination in August. There were 16 vacancies available.
102. *Graduation*—The annual graduation was held on the 16th July, 1942. The Hon. G. A. Jones, C.M.G., Director of Agriculture presided, and Diplomas in Practical Agriculture were presented to 18 students by Hon. G. Seymour Seymour, O.B.E.
103. *Health of Students*—The health of the students has been good throughout the year.
104. *Scholastic Work*—There were no major alterations to the curriculum during the year. Third year students were, however, given extended opportunities for undertaking practical surveying work on the Government Stock Farm.
105. *Non-Scholastic Activities*—The Student Christian Movement Branch has been active. The students took part in the Evelyn Cricket Cup Competition and the A Division of the Junior League Football Competition.
106. *Advisory Board*—One meeting of the Advisory Board was held during the year.
107. *Staff*—Mr. I. E. Johnson, D.I.C.T.A., joined the Staff at the beginning of the Xmas Term and Mr. L. L. Carrington who had been undertaking Lectures on Field Crops was transferred from this division.

## GOVERNMENT STOCK FARM, HOPE

108. Mr. H. C. Miller, Acting Farm Superintendent, reports as follows:—
109. *Weather*—Total rainfall for the year was 65.86 ins. distributed over 143 rainy days.
110. *Livestock*—Total head of livestock as at 31st March was 427. Sales of livestock totalled 147 of which 97 were sold for ringing.
111. *Milk Production and Sales*—Milk production totalled 286,142 quarts. The average number of cows milked per day was 183 and the average production per cow per day 4.3 quarts averaging 5.2% butter fat.
112. *Pastures*—The present condition of the pastures at Hope requires:—
- (a) Intensive re-planting.
  - (b) A reduction of the total number of animals carried.
113. *Feed*—A total of 1,696 tons of roughage and 303 tons of concentrates were fed to animals during the year.
114. *Manuring*—Four hundred tons of compost were manufactured during the year.
115. *Experiments*—Experiments undertaken and continued during the year include:—
- (a) Trials of various types of pit and trench silos.
  - (b) Soil conservation trials.
  - (c) An experiment to compare the yields of nutrients per acre obtainable from guinea grass, guatemala grass, uba cane and Co. 123, harvested at regular cycles of 2, 3, 4, and 6 months.
  - (d) Testing of a number of imported fodder grasses.

## GROVE PLACE STUD FARM AND EXPERIMENTAL STATION

116. Mr. L. A. Powell, Acting Agricultural Superintendent, reports as follows:—
117. In addition to my duties as Agricultural Superintendent at Grove Place I continued to serve in the Livestock Division as Livestock Field Officer for the Central Division.

### Weather

118. The rainfall for the Calendar Year 1942 was somewhat abnormal, there being 113.10 inches, distributed over 136 days.

### Experimental Station

119. The various sections of the station were maintained during the year. The long range fertilizer experiment with citrus was continued according to plan, while that in connection with bananas was concluded and the area utilized as an observation plot with seedling varieties. Fertilizer trials with maize, pea-nuts, cassava and potatoes, variety trials with sweet potatoes, cassava and cow peas, spacing experiments with sweet potatoes and strip crop rotations with sweet potatoes, maize, soya bean and pea-nuts were conducted under the direction of the Acting Agricultural Chemist.
120. Soil conservation received increased attention during the year. The extended areas under clean cultivation, comprising fully sixty acres were carefully surveyed and contour barriers laid down. Various kinds of grasses as well as stones found on the areas are being used as barriers. Cultivation on these contoured strips has attracted much attention from planters, and it is hoped will have the desired effect as an object lesson.
121. *Citrus*—The fourth crop was reaped and the necessary records taken. Measurements of all trees were taken twice, and three applications of fertilizer made at intervals of four months. The survey in connection with Fiddler Beetle and slug control was continued when 385,275 beetles, 46,525 egg batches and 667,835 slugs were collected and destroyed.
122. *Bananas*—The spacing experiment 9' x 9', 10' x 10', 11' x 11' and 14' x 14' (two stands), was concluded after reaping three crops and useful information as to grade, weight of bunch, average length of fingers and period for maturity has been recorded. The observation plot consisting of five acres set out 9' x 9', after making a very good start with the minimum amount of spraying, eventually went down to Leaf Spot. It is proposed to design an experiment to determine the cause.
123. *Avocado Pears*—Two varietal observation plots were established in 1940. The majority of these have made very good growth and several trees are now in bloom.
124. *Tahiti Limes*—Their development on three different kinds of rootstock, viz.: West Indian lime, rough lemon and sour orange, continues to be irregular. Several trees fruited and a small crop was reaped and recorded.
125. *Cotton*—An observation plot of one acre Sea Island variety was established during the year. Germination was fair and development satisfactory. The incidence of pests and diseases was so slight as to have no significant effects. A fair crop is now being reaped.
126. *Food Production*—As a contribution towards the war effort and in continuation of our fertilizer, spacing and variety trials with food crops, nearly 60 acres, including 20 acres of maize, were put under cultivation during the year.
127. *Fodder Crops*—Fully eight acres of various grasses were under cultivation, chiefly Guatemala and Elephant grass. The following new varieties are still under trial:—*Amphilophis pertusa*, Blue grass, Molasses, Rhodes and *Tricholaena rosea*.



128. *Re-afforestation*—A project was initiated in collaboration with the Conservator of Forests to establish 300 acres of the wooded hill lands with useful timber. This programme is to cover a period of four years.

129. *Nursery*—This consists of citrus, mahogany and fiddlewood. Budded citrus plants are now being distributed in small quantities while timber seedlings are being produced for afforestation.

### Livestock

130. All classes of livestock maintained good health, except goats, all of which have been transferred to Hope except the bucks which have been kept for services. The young stock were vaccinated against blackleg and the whole herd as well as horsekind, against Anthrax. All animals at the piggery were vaccinated against swine fever.

Fourteen well bred cows and 40 purebred Berkshire pigs were sold during the year.

131. *Dairy Produce*—Milk production totalled 45,527.75 quarts indicating an average daily yield of 124.7 quarts. The average number of cows milked daily was 34 with an average of 3.6 quarts per cow per diem. The quantity of milk available for the manufacture of butter was 29,533 quarts, which yielded 3,433.5 pounds or an average of 8.5 quarts to the pound.

132. *Stud Services*—There was active interest in livestock improvement throughout the year and although four other centres have been established in this parish, a large number—especially of cows and does—visited the Stud Farm.

### Agricultural Education

133. The senior students of the Jamaica School of Agriculture attended for a part of the Summer and Christmas Terms and received instruction in Practical Agriculture.

134. A short course, lasting for three days was held for the Agricultural Instructors of this Division, when the chief subject was soil conservation.

135. A special Field Day was conducted for school teachers attending a short course in Kingston.

136. Several individual visitors and small parties attended and showed keen interest in the various activities of the station.

### LIVESTOCK DIVISION

137. Mr. J. W. Howe, Live Stock Officer, reports as follows:—

138. The year under review was a good one for livestock generally throughout the Island and there was no shortage of feed except in the St. Andrew area which suffered from drought at the beginning of the year.

139. *Livestock Improvement Centres*—During the year 43 fully stocked Livestock Improvement Centres were in operation as well as two other Centres at which only small stock sires were placed for service.

140. *Subsidized Sires*—During the year the following privately owned animals were subsidized:—

|             |    |    |    |   |
|-------------|----|----|----|---|
| Bulls       | .. | .. | .. | 8 |
| Rams (goat) | .. | .. | .. | 9 |
| Boars       | .. | .. | .. | 8 |
| Jacks       | .. | .. | .. | 1 |

141. *Services*—The services given at the Livestock Improvement Centres totalled 11,827 while those given by subsidized sires was 1,966 making a total of 13,793 services, an increase of 832 services over the previous year. This number was made up as follows:—

| Class of Stock | Livestock<br>Imp. Centres | Subsidized<br>Sires | Total  |
|----------------|---------------------------|---------------------|--------|
| Bulls          | 3,829                     | 329                 | 4,158  |
| Rams (goat)    | 5,773                     | 1,117               | 6,890  |
| Rams (sheep)   | 129                       | ..                  | 129    |
| Boars          | 1,962                     | 519                 | 2,481  |
| Jacks          | 134                       | 1                   | 135    |
|                | 11,827                    | 1,966               | 13,793 |

142. *Demand for Livestock*—There was a good demand for all classes of livestock but particularly for beef cattle, dairy cattle and pigs. There was a shortage of beef cattle on the market and it was necessary to curtail slaughtering in the country areas.

143. *Health of Stock*—During the year the health of the stock throughout the Island was good and the main losses occurred among young stock due largely to lack of sufficient shelter. This combined with the rainy weather was responsible for heavy losses of young stock, especially in the northern parishes. Outbreaks of Hog Cholera and Anthrax were reported and were controlled by the Veterinary Division.

144. *Importation of Livestock*—During the year the importation of livestock from abroad for the Department consisted of 4 Toggenburg does and 2 Toggenburg rams imported from Canada.

145. *Supervision of Centres*—Owing to the gasoline restrictions arrangements were made for the Instructors of the Jamaica Agricultural Society to supervise the Livestock Improvement Centres.

146. *Piano Grass Eradication*—The experiment in connection with the eradication of Piano Grass was continued at Good Hope. Various methods of cultivation and other treatment are being tried as well as planting of various pasture grasses.

147. *Live stock and Meat Control*—During the year I continued as Deputy Chairman of the Advisory Committee on Live stock and Meat Control. During the year the Office of the Live Stock and Meat Control was moved from Hope into Kingston and Mr. J. Mac-Intosh was appointed Secretary.

148. *Clearing House*—A Live Stock Clearing House was set up in Kingston and the Abattoir stock yards were constructed for the handling of all classes of stock brought into Kingston for slaughter.

149. During the year I visited San Domingo and Cuba in connection with the purchase of cattle in those countries.

### VETERINARY DIVISION

150. Dr. T. Threlkeld, Acting Senior Veterinary Officer, reports as follows:—

#### Organisation

151. The Veterinary Division consists of one Veterinary Officer, one Stock Inspector, one Junior Technical Assistant and a Stenographer.

#### Diseases

152. *General*—An assisted scheme of vaccination against Anthrax, Blackleg and Swine Fever was practised during the year to contribute to the maintenance of the meat situation of the Island. Some 11,614 animals for over 1,907 owners were vaccinated under this scheme.

153. *Anthrax*—There were 20 suspected cases investigated during the year, one being diagnosed positive. There was a major outbreak at Pedro Plains, St. Elizabeth. Some 5,661 head of stock were vaccinated for over 1,323 owners during the year.

154. *Swine Fever*—There were 29 suspected outbreaks investigated during the year of which 6 were proved positive. These occurred in Mocho, Clarendon; Knockpatrick, Manchester; Ocho Rios, St. Ann; Johns Town, St. Thomas and 2 in K.S.A.C. Some 2,809 pigs for over 544 owners were vaccinated with Crystal Violet Vaccine (Blood Origin). Attempts are in progress to vaccinate all swill-fed pigs.

155. *Blackleg*—There were 8 positive outbreaks investigated during the year and some 3,144 head of stock for 50 owners vaccinated.

156. *Tick Fevers*—Four major cases of Texas Fever (*Piroplasmosis bigeminum*) were investigated during the year. Shortage of dipping materials and suitable drugs are liable to cause an increase in this form of disease.

157. *Helminthiasis*—This continues to be Jamaica's worst enemy to stock. Only the fringe of this problem can be tackled with the restricted staff.

158. *Poultry Diseases*—There was a great increase in the number of owners assisted with poultry diseases—these being mainly B.W.D., Fowl Pox, Blackhead in turkeys, etc., etc.

### Livestock Improvement Centres

159. Thirty-six professional visits were made to these centres mainly for cases of Actinomycosis, Pneumonia, Texas Fever, Temporary Infertility and Parasitic Infestations.

### Police

160. Assistance was rendered to the Police on 15 occasions mainly for cruelty and poison cases.



## Government Stock Farm, Hope

161. Major disease problems of this institution are still contagious abortion, sterility and digestive troubles resulting from irregular feeding. Annual T. B. tests gave only one reactor. Calhhood vaccination is being practised to control contagious abortion.

### Grove Place

162. The chief diseases here are still tick and other parasitic infestations. The lack of grass is a serious limiting factor in the health of the stock.

## Other Government Institutions

163. Some 67 professional visits were made to prisons, hospitals, etc., etc. to treat stock at these centres, this great increase being due to the animal haulage replacing mechanical haulage during the petrol restriction period.

### Importations of Animals

164. The following importations were made during the year:—

| U.S.A.        | Canada             | Cayman Islands  |
|---------------|--------------------|-----------------|
| 1 Jersey Bull | 2 Holstein Bulls   | 1 Bull (native) |
|               | 2 Holstein Heifers | 15 Horsekind    |
|               | 6 Toggenburg Goats | 92 Cattle       |
|               |                    | 12 Goats        |
|               |                    | 1 Pig           |

totalling 4 bulls, 15 horsekind, 94 cattle, 18 goats and 1 pig.

### Veterinary Education

165. Lectures were given during the year in Veterinary Science at the Jamaica School of Agriculture. Field diagnosis demonstrations were given to Agricultural Instructors, Livestock Officers, etc.

### Experimental Work

166. Limited experiments were conducted during the year with Phenothiazine, Stilboestrol Dipropionate, Acriflavine and Sulphonamide in the treatment of various conditions.

### Bee Keeping

167. Government supervision of apiaries was maintained by Mr. Holon Heron, Instructor in Beekeeping. No cases of American Foul Brood Disease of Bees were reported during the year, while the Annual Registration of Bees showed there were 266 Apiarists with 616 Apiaries containing 31,140 Colonies.

## PLANT DISEASE INSPECTION

168. All Inspectors of Plant Diseases were seconded for service with the Jamaica Agricultural Society to perform both duties of Instructor and Inspector thus reducing the size of districts covered previously by both.

169. Every Agricultural Instructor was made an Inspector of Plant Diseases so as to carry out the provisions of the Law. This necessitated the appointment of four Supervising Instructors.

## PRODUCE INSPECTION

170. Mr. P. W. Murray, Chief Inspector of Produce, reports as follows:—

171. *Regulations under the Law*—These Regulations have been modified to meet war conditions in order to ensure as far as possible, the movement of produce within and away from the Island.

172. *Detention and Destruction of Produce*—The total amount of produce detained and destroyed has been considerably less than last year; for instance, only five bags of ginger were detained and only 22½ bags of pimento. This is to be attributed to close observation of the Government requirements with regard to the quality of the export on the part of the growers.

173. *Court Cases*—There were four cases as compared with 15 during last year. This is attributable to closer co-operation from buyers and growers with this division.

174. *Revenue from Licences*—There was a falling off in licences due to restrictions in banana and citrus trade. The revenue realized therefrom was £2,919.

175. *Produce Board*—The personnel remained the same as last year.

176. *Staff*—The staff also remained the same in numbers though four of the six Inspectors have been seconded for work in other Departments.

### General Observations on Island Produce

177. *Bananas*—All bananas were purchased by Government, but only small quantities were exported. A high quality was maintained although allowance was made for local conditions in order to keep growers in production so that the industry may be reactivated after the war. A large proportion of the crop was sold within the Island and has been the main source of food supply throughout the country.

178. *Citrus*—Citrus fruits converted into pulp, juices and oil, were purchased by the British Government through the local Government at generous prices. This industry has fared best of our agricultural exports as the entire crop was purchased—grapefruit, bitter and sweet oranges.

179. *Cocoa*—There was a fair crop and the quality was excellent, buyers maintaining rigid selection of ripe pods.

180. *Coffee*—This commodity has fallen off in quality due to insufficient supervision by Inspectors in coffee areas. This has been caused by the reduction of the staff of Inspectors and restricted travelling allowances to this Division. Steps are being taken to correct this.

181. *Pimento*—The crop was fair and was bought at reasonable prices by Government. The quality was very satisfactory.

182. *Ginger*—There was a good crop 50% of which was sold to exporters at reasonable prices. The balance still remains unsold at the present time. The position is under consideration by Government.

183. *Honey*—The crop was fair and excellent in condition. The entire crop was purchased by Government and is now uniformly graded and marked by this Division.

184. *Tomatoes*—No tomatoes were exported. Local consumption took care of the crop, both fresh and canned.

## CHARLTON DEMONSTRATION PLOT

185. Mr. J. B. Sutherland, Supervisor of Agricultural Instructors is in charge of this plot and reports as follows:—

186. The demonstration plot at Charlton is now in fair condition. Sales of yams, citrus and vegetables are now £26 in excess of expenditure. The plot serves as a profitable demonstration for settlers in the area.

## CITRUS DEVELOPMENT WORK

187. Mr. J. B. Sutherland, Supervisor of Agricultural Instructors, who is in charge of the nurseries, reports as follows:—

### Citrus Nurseries

188. A total of 51,582 budded citrus plants was distributed from the Charlton nursery and 806 from the Tamarind nursery.

189. There are now some 20,000 plants in the Charlton nursery and 12,000 in the Tamarind nursery, thus making a total of 32,000 for distribution 1943-44.

190. 150 quarts sour orange seeds have been sown in the nursery at Hope Gardens, and will be removed to the above mentioned nurseries within this quarter. The supply this year has proved to be one of the most successful carried out in the nursery. I have seen a good deal of the plants sent out and they have taken most successfully.



## Citrus Development Loan Scheme

191. The Citrus Loan Scheme was carried out by the Instructors reporting on the plantations under the Scheme. Many of the planters have started repaying their loans.

## CROP DEVELOPMENT

192. Mr. G. K. Argles, Crop Development Officer, reports as follows:—

193. Mr. W. G. Stuart, Agricultural Officer, acted as part-time Assistant up to November, 1942, when Mr. B. F. Topper was appointed Temporary Agricultural Officer and relieved Mr. Stuart for other duties.

194. In addition to the work on the propagation and improvement of permanent crops, the division assumed responsibility for the multiplication and testing of selected and imported types of grains, pulses and cover crops formerly controlled by the Agricultural Chemist, and also started investigations on the selection, multiplication and testing of miscellaneous new crops of possible economic value.

### The Improvement Of Permanent Crops

195. As in the preceding year work was mainly concentrated upon the vegetative propagation and distribution of selected varieties of avocado, mango and Tahiti lime, although the number of plants distributed declined slightly owing to transport difficulties.

196. *Avocados*—889 Avocado trees of 14 American varieties were distributed, and 6 new variety trials were established bringing the total planted to 35.

197. *Mangoes*—3,228 Mangoes were distributed comprising the following varieties:—Bombay, 1,551. Haden, 782. Julie, 895. A nursery of seedlings of 13 varieties was established as an initial step in carrying out rootstock trials.

198. *Limes*—4,630 Tahiti Limes were distributed, 1,492 being on rough lemon stock and 3,138 on West Indian lime stock.

199. *Guavas*—Preliminary trials with 3 selected scions indicated that guavas could be budded without difficulty.

200. *Cocoa*—As an initial step to the importation of budwood of selected Trinidad clones, small scale budding trials were carried out with encouraging results.

201. *Tung Oil*—A few seedlings of *Aleurites trisperma* raised from seed obtained in Puerto Rico and Cuba, made vigorous growth when planted out at Hope in 1942.

202. *Pineapples*—Plots of Smooth Cayenne at Hope and in Vere continued to show such a high mortality associated with mealy bugs that no extension of planting was possible.

### The Multiplication and Testing of Selected Types of Grain, Pulse and Cover Crops

203. In July, 1942, seeds of the following varieties were handed over and planted out at Hope during the Autumn and Winter:—

204. (a) *Grains*—Hill Rice 11 types, Sorghum 8, Sesame 4, Sunflower 3, Adlay 1. One more Hill Rice variety was subsequently imported. Seeds of 1 Hill Rice variety, 3 Sesames and 2 Sunflowers were found to have lost their viability. Ten Hill Rice varieties were planted at Hope in November, which is generally considered to be out-of-season, and 7 types were maturing crops in March. The 3 other varieties produced ears devoid of seed, as did 1 Sorghum sown in the normal autumn season.

205. (b) *Pulses*—Cow Peas 12 types, Groundnuts 8, Mung Beans 7, Soya beans 6, Pigeon Peas 4, Bonavis beans 4, Cluster beans 1. In addition seeds of 9 Soya bean varieties, 1 Cow pea and 1 Pigeon pea were imported. Of the original varieties the seeds of 4 Soya beans and 1 Groundnut were found to have lost their viability. Mosaic was recorded in Mung Beans at Hope for the first time.

206. (c) *Cover Crops*—Crotalaria varieties 7, Jerusalem Peas 2, Mucuna spp. 2, Indigofera 1, Colopogonium 1, Pueraria 1. Another Indigofera variety was imported but the seeds failed to grow. Cercospora Pod Rot was observed on Jerusalem peas which had heavy foliage at the time pods were ripening.

### The Selection, Multiplication and Testing of miscellaneous new Crops of possible economic Value

207. *Loofahs*—Grown at Hope on trellises most plants of both long and short types grew and bore well. Some plants were however killed at an early stage by eelworm, until it was found that this could be checked by earthing up to encourage development of adventitious roots.

208. *Derris*.—Nearly half an acre at Hope was established in 3 varieties of derris, *D. Sarawak*, *D. Malaccensis Sarawakensis* and *D. elliptica*, from which preliminary comparisons as to yield should be drawn and planting material obtained.

209. *Sansevieria*—Two trial plots were established in February to test growth under shade and in full sunlight and to determine whether suckers, roots or decapitated old plants were the best planting material.

210. *Miscellaneous Crops*—Guayule seeds received from abroad and local selections of *Calotropis*, *Cryptostegia* and *Castor* Oils were sown and except for the Guayule have been transplanted into plots.

## ORANGE RIVER EXPERIMENTAL STATION

211. Mr. G. K. Argles, Senior Agricultural Officer for the Eastern Division and Mr. E. A. Tai, Agricultural Officer, who was directly in charge of operations at this Station report as follows:—

### Introduction

212. Orange River Station, near Richmond, St. Mary, was acquired in November, 1940 and work was started in January, 1941. No annual report was however submitted for 1941-42.

213. The property consists of 78 acres, and the soil throughout is a typical clay of the Richmond Bed type. Apart from about 2 acres of level land and small areas of steep hillside the property consists of gentle and moderate slopes below 25°. Nearly 30 acres were in Gros Michel bananas when the property was acquired.

214. During 1941-42 much attention was paid to methods of controlling soil erosion and particularly to a system of contour trenches and barrier grasses designed ultimately to produce bench terraces. The so-called A Level was found to be a simple and effective instrument for running contour lines. Both open areas and a standing banana field were re-trenched in this manner. Trials were started with various types of barrier plants both under shade and in the open.

215. Three fertilizer trials were established on an existing field of bananas, but the inroads of Panama Disease rendered these useless. A fourth trial laid down on Green-Castle Estate had to be abandoned for the same reason.

216. A spacing trial was started with Gros Michel bananas.

217. Extensive experiments on the spraying of bananas to control Cercospora Leaf Spot disease were started on behalf of the Mycologist.

218. About 12 acres of contoured land were planted in new varieties of bananas on behalf of the Government Botanist. A new system of spacing bananas was adopted in this area, whereby plants were set on the contour in such a way as to make tillage by implements possible.

### Report On Activities For 1942-43

219. *Weather*—During the year 106.81 inches of rain were recorded compared with the 20-year average of 79.35 inches. There were 216 rainy days and no period of pronounced drought. Damage from high winds was negligible.

220. *Soil Conservation Trials*—Progressed sufficiently far to allow the following conclusions to be drawn:—

221. *Trenching*—2' x 18" trenches graded on a fall of 1: 100 and up to 15 chains long will carry off surplus water during heavy rains without appreciable scouring.

222. *Outlet Drains*—If cut straight downhill or with bends super-elevated and with flattened floors 3 to 4 feet wide and covered with a mat of running grasses outlet drains will take water from contour trenches serving up to 20 acres without damage. If narrow, such drains are liable to scour. The laying of turf proved an ideal though expensive method of grassing, and the method generally adopted was the planting of tufts during seasons when only light rains were expected. Of the grasses tried the most satisfactory appears to be the Pimento or Savanna grass, *Axonopus compressus*.

223. *Barrier Grasses*—A number of different plants, mostly grasses, were compared as barriers planted 6 inches apart on the upper banks of contour trenches both in the open and under shade.

224. *Trash Barriers*—During the period needed for grass barriers to develop into effective filters the silting of trenches has been prevented by heaping trash and weeds in a row immediately above the grass barriers.



225. *The Banks of Bench Terraces*—A relatively steep area was artificially terraced, with a vertical distance of 6 feet between contour lines. Banks were formed with different angles of slope, and under these soil conditions banks with slopes of approximately 45° and 55° stood up satisfactorily during very heavy rains so long as the beds above were tilted slightly away from the banks. Banks established solely in Khuskhus grass became slightly bound and supplied large quantities of mulch several times a year. Banks with a single central row of Khuskhus and running grasses, Bahama and Savanna, established above and below do not appear to have bound so well nor supplied much mulch, and in addition became weedy.

226. *Strip cropping*—A small relatively steep hillside was established in alternate contour strips of fodder grasses and arable land.

### Banana Investigations

227. *Spraying Trials* carried out on behalf of the Mycologist were completed.

228. *Defoliation Experiment*—An area was established in Gros Michel, and a defoliation experiment laid out to determine relationships between numbers of leaves per plant and the yield and quality of fruit produced.

229. *Fertilizer Investigations*—Areas were established in Lacatan and Cavendish bananas and a fertilizer-mulch experiment laid out on each variety. Fertilizer trials were carried out on Gros Michel bananas on the adjoining properties of Charlottenburg and Hopewell.

230. *Spacing Trials*—The trial started the previous year had to be abandoned through Panama Disease before conclusive results were obtained.

231. *Banana Variety Trials*—The area in seedling bananas grown on behalf of the Government Botanist was extended.

### Investigations on other crops

232. *Permanent Fertilizer Experiment*.—A 54-plot confounded experiment was laid out on behalf of the Agricultural Chemist to determine reactions to fertilizers and residual effects. Plots were 1/40th acre in size, but of variable shape to allow each to be fitted on a single contour bed. The first crop planted in April was corn, and the Autumn crop Soya Beans.

233. *Organic Matter-Lime Experiment*—A 35-plot Experiment was laid out on similar lines to determine responses to organic matter supplied as mulch, stable manure and green manure with and without lime. The first crop planted in the autumn of 1942 was corn.

234. *Observations on other Crops*—Observation plots were established in several crops. Two crops of sweet corn gave promising results, while Adlay and Sunflowers would appear to merit further attention. A tall local type of sorghum and cotton gave poor results. Small plots of derris and vanilla were also established.

235. *Re-afforestation*.—Plots of cedar, mahogany, mahoe, fiddlewood and podo (South African variety of yacca) have been established on a steep eroded hillside. Burmese teak have been planted on the banks of a stream.

### Extension Work

236. *Food Production Plots*—Travelling restrictions made adequate supervision of 4 food production demonstration plots in St. Mary difficult and observations on crops were incomplete. So far as soil conservation measures were concerned however observations tended to confirm the conclusions reached at Orange River.

237. *Planting Materials*—Considerable quantities of fodder grasses, notably Elephant grass, were distributed.

### NEWTON FARM EXPERIMENTAL STATION

238. Mr. J. R. V. Smyth, Senior Agricultural Officer, Western Division, reports as follows:—

239. Newton Farm, consisting of 129 acres situated in the parish of St. James, was leased by Government in September, 1940 for the purposes of an Experimental Station. Mr. W. K. Mitchell, Assistant Agricultural Officer, has been stationed at Newton Farm.

240. An exact field survey has not yet been carried out. The approximate distribution of the areas at the end of March, 1943 was as follows:—

|                                                           | acres |
|-----------------------------------------------------------|-------|
| Banana experiments .. .. .                                | 28    |
| Manurial experiments and observations .. .. .             | 13    |
| Mulch crops .. .. .                                       | 7     |
| Coconuts .. .. .                                          | 10    |
| Pastures .. .. .                                          | 20    |
| Re-afforestation (Mahoe) .. .. .                          | 1     |
| Ruinant and bush etc. (20) yard and buildings (5) .. .. . | 25    |
| Land available for experiments .. .. .                    | 25    |
|                                                           | <hr/> |
|                                                           | 129   |

241. Work under bananas has consisted of (a) *Leaf Spot investigations*, under the control of the Leaf Spot Mycologist and related to the life history and infection of the causative fungus, with manurial and cultural experiments superimposed, also investigations on the effect of the disease on production and ripening of fruit, reaction of fertilisers, lime and mulch. Results indicate that under the particular soil conditions at Newton Farm ascospore production of the fungus renders control of the disease by normal spraying cycles impossible, though control can be obtained by regular weekly heart leaf spraying with sticker. (b) *Manurial and cultural experiments*. It appears that fertiliser application only is insufficient to raise production satisfactorily on poorer shale soils and indications are that liming and mulching and manuring with organic manures will have to play their part. Improved methods of contouring bananas have proved cheap and effective in conserving moisture and soil. Further work is called for as to the best barrier grasses for shade conditions. The increase of plant population has received special attention; under suitable soil conditions, an increase of 20% has been found advantageous. (c) *Seedling Bananas*. Trials of fourteen seedling bananas, were carried out on behalf of the Government Botanist.

242. Observational and qualitative manurial experiments were carried out on a variety of crops, which indicate that growth depends on two main factors—soil and weather. The most important soil type is Trappean Red Shale, which in the natural state is extremely acid and deficient in phosphate and therefore infertile. Promising results have been obtained by the addition of lime, phosphate and organic matters, and experiments are being continued in this direction. Hill Rice appears to have distinct possibilities.

243. Guatemala grass has been outstanding as a fodder grass. Elephant and Guinea grasses have proved to be the best fodder grasses for barrier strip soil-conservation purposes. Khuskhus grass is effective, but growth is slow.

244. The following varieties of crops have been grown, but further work is necessary in connection with them:— leguminous, pulse, cover and green manures, grain and root crops, grasses and canes, fibre, orchard, vegetables, and other special crops.

### Extension Work

245. *Fertilisorth—Banana Manurial Experiment* (quantitative). Records continued, but results have been negative.

246. *Ducketto*—(a) *Banana Manurial* (quantitative). This experiment was started September, 1941, but had to be abandoned in May, 1942, owing to rapid and extensive spread of Panama Disease, before sufficient data could be obtained.

247. (b) *Banana Manurial* (qualitative) On chocolate shale, a soil type not previously tested with fertilisers. Started June, 1942 on plants planted in March. Growth has been fair, but somewhat slow. Shooting commenced March, 1943. No apparent reactions to fertilisers.

248. *Seven Rivers*—First crop of spacing experiment was reaped. Preliminary inspection of results indicated that spacing 14' x 6' on the contour shows slight superiority over 11' hexagonal and 14' x 11' double planting; 10' hexagonal and 9' hexagonal are both behind the other treatments. It should be noted that this is the plant crop where sucker competition is not severe. The ratoon crop should show other differences.

249. Records on the older experiments (mulching and liming) continue, but Panama Disease has severely curtailed the area.

250. Two and a half acres have been abandoned and used as multiplication plot for corn breeding work under the Government Botanist.

### LUCKY HILL SCHEME

251. Mr. G. K. Argles, Senior Agricultural Officer, Eastern Division, reports as follows:—

### Introduction

252. Lucky Hill Pen. 863 acres, is situated on the border between St. Mary and St. Ann. It was leased in November, 1940. Up to December, 1941 it was administered by the Food Production Board, and thereafter by the Department of Agriculture, both bodies having the assistance of an Advisory Committee. No annual report has been submitted previously.



## Objects of the Scheme

253. A project financed from relief funds was started with the object of enabling labourers to develop and farm the property on a co-operative basis with the assistance of Jamaica Welfare Ltd. In all about 110 labourers were enrolled as members of 5 Pioneer Clubs, each Club to farm approximately 100 acres of land. The final objective, which was expected to be reached in 5 years, was the settlement of these men and their families on the property. During the past year it has been found necessary to modify the original scheme in a view to reducing the number of permanent settlers to some extent and also to develop the property as a unit instead of in five sections, clubs to encourage a higher standard of agricultural efficiency. It must be emphasised that the scheme is the first of the kind to be carried out in Jamaica and may therefore be regarded as essentially experimental.

## Description of Property

254. Apart from about 10 acres of heavy alluvial soil, Lucky Hill Pen consists of a series of hills and valleys of white limestone formation typical of much of the land in St. Ann. The average annual rainfall is between 70 and 80 inches, in most years fairly well distributed.

## Agricultural Survey

255. During 1942-43 a rough survey was made of the property in which it was found possible to classify the different sections as follows:—

- (i) Arable land—Area approximately 150 acres or 17% of property.
- (ii) Potential arable land—Area approximately 45 acres or 5%.
- (iii) Fruit tree land—Area approximately 120 acres or 14%.
- (iv) Fodder grass land—Area approximately 120 acres or 14%.
- (v) Common pasture land—Area approximately 205 acres or 24%.
- (vi) Woodland areas—Area approximately 223 acres or 26%.

## Agricultural Development

256. Agricultural policy has been based on mixed farming with the classification outlined above as the basis for crops and live-stock programmes.

257. *Annual Crops*—In all about 250 acres have at one time or another been planted in small crops.

258. *Permanent crops*—Up to the end of March, 1943, over 60 acres had been established in citrus and about 7 acres in avocado pears.

259. *Cattle*—A small herd of 10 Holstein dairy cows and a bull was maintained and this was supplemented by the purchase of 24 dairy cows of nondescript breeding to be used as foundation dairy stock. A Jersey bull was bought and arrangements made to obtain Jersey cows in exchange for some red poll cows acquired with the property. Working steers and mules were also obtained. Over 40 acres were planted in fodder grasses to supplement existing commons. The erection of a dairy shed was started.

260. *Small stock*—Pigs, goats and rabbits were acquired and houses and pens built.

## Agricultural Economics

261. It was found that the standard method of cost accounting did not provide adequate data on the costs of production of individual crops, and a new and more detailed system was introduced towards the end of the year. However, it early became apparent that the standard method of cost accounting was not suitable for the property, and a new system was introduced, based on the method of hand tillage. Animal drawn implements were therefore introduced.

## Tillage by Implements

262. During the past year several men have been trained to use implements drawn by steers and mules. Particularly effective among these were 10-in ploughs and a heavy home-made harrow with wooden spikes, drawn by steers, pony ploughs and scufflers drawn by one mule and a seed drill drawn by two mules. Although much of the work has been done by half-trained men and animals it is already clear that the costs of growing crops with implements is only one-third to a half of the costs of growing them by hand.

## The Drying of Grain and Pulse Crops

263. Among the first buildings erected on Lucky Hill was a combined packing house and store-room with approximately 1,200 square feet of floor space, attached to which were 30 sliding wooden trays with a total drying space of 1,800 square feet.

## Soil Conservation

264. The only method adopted has been the laying of stones on small benches cut around hillsides on the contour. From the standpoint of controlling erosion, however, the effect appears to be slight, and the stones form strips that are difficult to keep free from weeds.

## Housing

265. An Overseer's house and 8 2-room cottages have been built during the two years.

## Social Development

266. The progress of the co-operative movement among club members has been very slow, despite the establishment of study groups, and the fact that the property is situated in a district with a high incidence of unemployment, and in a community where a programme of agricultural development is being carried out by relief workers. Similar projects had been started by the Lands Department two years earlier at Irwin, Montserrat Bay, and in the previous month at Twickenham Park, Spanish Town. A smaller scheme had been started in January, 1942, on an experimental basis at the property. The Department of Agriculture prepared the programme of development. The properties so far acquired in the Eastern Division are:—

## AGRICULTURAL CENTRES, EASTERN DIVISION

267. Mr. G. K. Argles, Senior Agricultural Officer, Eastern Division, reports as follows:—

### Introduction

268. In July, 1942, the Department of Agriculture, Eastern Division, was requested by the Lands Department to assist the Lands Department in selecting a number of properties in districts with a high incidence of unemployment, and in formulating programmes of agricultural development to be carried out by relief workers. Similar projects had been started by the Lands Department two years earlier at Irwin, Montserrat Bay, and in the previous month at Twickenham Park, Spanish Town. A smaller scheme had been started in January, 1942, on an experimental basis at the property. The Department of Agriculture prepared the programme of development. The properties so far acquired in the Eastern Division are:—

| Parish        | Property                    | Acreage<br>(Approx. in most cases) | Month work<br>started (1942) | Remarks     |
|---------------|-----------------------------|------------------------------------|------------------------------|-------------|
| St. Catherine | Twickenham Park             | 1,044                              | June                         |             |
| St. Catherine | Grove Farm                  | 220                                | October                      |             |
| St. Andrew    | Salisbury Plain             | 150                                | August                       |             |
| Portland      | Windsor and Seaman's Valley | 1,287                              | August                       |             |
| Portland      | Boundbrook                  | 24                                 | July                         |             |
| Portland      | Caenwood                    | 780                                | August                       |             |
| St. Mary      | Dover                       | 1,300                              | August                       |             |
| St. Mary      | Nutfield                    | 1,531                              | August                       |             |
| St. Mary      | Heywood Hall                | 60                                 | January                      |             |
| St. Mary      | Eden Park                   | 309                                | November                     | Area leased |
| St. Mary      | Western St. Mary            | 500                                | October                      |             |
| St. Ann       | Seville                     | 600                                | September                    | Area leased |



## Soil Types and Climatic Conditions

## Soil Conservation Methods

## Swamp Reclamation

### Crops Planted

## General Growth of Crops

## New Crops

## Fertilizer Investigations

## Variety Trials with Ground Provision Crops

## Development of Nurseries

## Livestock

## The Training of Relief Workers

## AGRICULTURAL OPERATIONS, WESTERN DIVISION



290. *Agricultural Centres*—There are two Agricultural Centres in the Division—one at Irwin, St. James and the other, recently acquired, at Haughton Court, Hanover. The agricultural development programmes for these centres include soil erosion control methods, the use of implements for tillage and the incorporation of livestock. Plots of imported seeds have been laid out for multiplication and observation purposes.

291. *Advisory Work*—The Senior Agricultural Officer reported on the suitability of various properties for Land Settlement purposes and paid visits to Knockalva Practical Training Centre and also to numerous other properties for the purpose of advising as to their agricultural development, both with regards to crops and livestock. Information relating to various insect pests and diseases of different crops was also furnished to farmers in the division.

292. *Soil Erosion Control*—An increased interest is being taken in this work, especially in the parishes of St. James and Hanover; considerable propaganda has been carried out in this direction.

293. *Conferences and Meetings*—A Conference of Agricultural Instructors was held at Newton Farm, when the main objects under discussion were:—Homesteading in Jamaica, rations for poultry and the control of insect pests by cultural methods. Regular meetings of the Knockalva Practical Training Centre Advisory Committee, Local Food Production Committees, Co-operative Rice Growers Association, Jamaica Agricultural Society Branches Associated meetings, were attended.

294. *Committees*—The Senior Agricultural Officer was appointed member of the Sugar Arbitration Authorities for the parishes of St. James, Westmoreland, and Hanover, and reappointed member of the Knockalva Practical Training Centre Advisory Committee.

295. *Library*—A small library has been started, from which numerous publications, departmental bulletins and reports were loaned and/or distributed during the year.

296. *Miscellaneous*—Close co-operation was maintained with the area Supervisor of the Jamaica Agricultural Society, particularly with regard to the inspection of departmental trial plots, experiments, the inspection of banana cultivations in connection with Leaf Spot Control Work and general Food Production work in the Division. Special enquiries were carried out relating to the growth of *Cryptostegia*, Fibre Crops, Camphor, Cotton, and Rubber, and assistance was afforded to Research Officers of the Sugar Growers Association, with maize micro plots and soil sampling.

## RESEARCH AND LABORATORIES

### GOVERNMENT CHEMIST'S DIVISION

297. Mr. W. L. Barnett, Government Chemist, reports as follows:—

298. The total number of samples and specimens analysed was 4,359 and comprised 3,129 official analyses and 1,230 general samples.

#### Official Analyses

|                                             |                                                           |       |       |
|---------------------------------------------|-----------------------------------------------------------|-------|-------|
| (i) Police Department                       |                                                           |       |       |
|                                             | Criminal and Toxicological, human viscera etc.            | 555   |       |
|                                             | Murders and shootings with intent                         | 107   |       |
|                                             | Arson                                                     | 1     |       |
|                                             | Assault occasioning actual bodily harm                    | 4     |       |
|                                             | Burglary and Larceny                                      | 19    |       |
|                                             | Forgery                                                   | 5     |       |
|                                             | Obtaining money by false pretences                        | 2     |       |
|                                             | Illegal Possession of Goods                               | 9     |       |
|                                             | Vagrancy                                                  | 2     |       |
|                                             | Pollution of Streams                                      | 2     |       |
|                                             | Breaches of Defence Regulations, Gasolines and Kerosines  | 17    |       |
|                                             | Special Petroleum Specimens                               | 10    |       |
|                                             | Coins and Counterfeiting implements                       | 538   |       |
|                                             | Opiums, Ganga, and implements for smoking Opium and Ganga | 1,228 |       |
|                                             | Medicines, Drugs, etc.                                    | 24    |       |
|                                             | Poisonous Drugs, Patent Medicines etc.                    | 7     |       |
|                                             | Alcoholic liquors and implements                          | 130   |       |
|                                             | Kerosines, Gasolines, under Petroleum and Fuel Oil Law    | 55    |       |
|                                             | Foods, under-Adulteration Law                             | 7     |       |
|                                             | Substances examined on behalf Security Officer            | 9     | 2,731 |
| (ii) Customs and Excise Department          |                                                           |       |       |
|                                             | Rum, Wine, and other Alcoholic liquids                    | 114   |       |
|                                             | Fuel Oils and Kerosines                                   | 17    |       |
|                                             | Condensed and Evaporated Milks                            | 10    |       |
|                                             | Miscellaneous                                             | 22    | 163   |
| (iii) Department of Science and Agriculture |                                                           |       |       |
|                                             | Animal Viscera, Waters, Feeds                             | 17    |       |
|                                             | Essential Oils (8), Honeys (11)                           | 19    |       |
|                                             | Miscellaneous                                             | 11    | 47    |
| (iv) Island Medical Department              |                                                           |       |       |
|                                             | Milks, genuine (73) Adulterated (49)                      | 122   |       |
|                                             | Foodstuffs, etc., examined for Poison                     | 25    |       |
|                                             | Medicines and Drugs (9), Waters (2)                       | 11    | 158   |
| (v) Department of Public Works              |                                                           |       |       |
|                                             | Clays (2), Coals (2), Marl (1), Shale (1), Oils (1)       | 7     | 7     |
| (vi) Commissioner of Lands                  |                                                           |       |       |
|                                             | Red Earths (2), Acetic Acids (2) Orange Oils (1)          | 5     |       |
| (vii) Transport (Defence) Board             |                                                           |       |       |
|                                             | Alcohols                                                  | 1     |       |
| (viii) Chief Censor                         |                                                           |       |       |
|                                             | Specimen of Pills                                         | 1     |       |
| (ix) Postmaster of Jamaica                  |                                                           |       |       |
|                                             | Envelopes                                                 | 1     |       |
| (x) Government Printer                      |                                                           |       |       |
|                                             | Type Metals                                               | 2     |       |
| (xi) Prisons Department                     |                                                           |       |       |
|                                             | Starches                                                  | 1     |       |
| (xii) Petroleum Products Board              |                                                           |       |       |
|                                             | Gasolene                                                  | 1     |       |
| (xiii) Kingston and St. Andrew Corporation  |                                                           |       |       |
|                                             | Red Earths (1) Coals (2) Cokes (2) Coal Tars (1)          | 6     |       |
| (xiv) Coconut Marketing Board               |                                                           |       |       |
|                                             | Margarines                                                | 3     |       |
| (xv) Commissioner—Turks Island              |                                                           |       |       |
|                                             | Salt (1) Whisky (1)                                       | 2     | 23    |
|                                             |                                                           |       | 3,129 |



## General Analyses

|                                                                |       |
|----------------------------------------------------------------|-------|
| Fresh Milks, Government Stock Farm .. .. .                     | 986   |
| Fresh Milks, Private Producers .. .. .                         | 22    |
| Alcohols (3), Rums (46) Native Wines and Liqueurs (12) .. .. . | 61    |
| Sugars .. .. .                                                 | 1     |
| Waters, Potable (6) Industrial (5) .. .. .                     | 11    |
| Cattle Dipping Fluids .. .. .                                  | 66    |
| Horse Salivas for "Dope" .. .. .                               | 31    |
| Substances, various, for Poison .. .. .                        | 4     |
| Animal Viscera for Poison .. .. .                              | 2     |
| Urinés for Poison .. .. .                                      | 3     |
| Feeding Stuffs (Poultry) (3) Copras (4) .. .. .                | 7     |
| Oils, Essential .. .. .                                        | 1     |
| Oils, Lubricating .. .. .                                      | 2     |
| Ores and Minerals .. .. .                                      | 10    |
| Concrete .. .. .                                               | 1     |
| Compositions (From Roman Catholic Cathedral) .. .. .           | 1     |
| Drugs and Chemicals .. .. .                                    | 3     |
| Denaturants for Alcohol .. .. .                                | 2     |
| Specimens submitted for cause of Damage .. .. .                | 10    |
| Miscellaneous .. .. .                                          | 6     |
| Total General Samples .. .. .                                  | 1,230 |
| Grand Total .. .. .                                            | 4,359 |

## Official Analyses

299. 252 specimens of human viscera were analysed in connection with 163 deaths. Poison was found in 79 cases.

| No. of deaths | Poison found          | Remarks                                                                |
|---------------|-----------------------|------------------------------------------------------------------------|
| 1             | Acetic Acid           | Male Adult suicide                                                     |
| 9             | Alkaloidal Substances | 5 male adults, 2 female adults,<br>1 male child, 1 female child        |
| 1             | Antimony              | Female adult                                                           |
| 7             | Arsenic               | 2 male adults, 2 female adults, 1 male child,<br>1 female child        |
| 3             | Arsenic and Cresols   | 2 male adult suicides, 1 female<br>adult suicide                       |
| 6             | Cresols               | 4 male adult suicides, 2 female<br>adult suicides                      |
| 39            | Glucosides            | 4 male adults, 7 female adults, 11 male<br>children 17 female children |
| 4             | Hydrocyanic Acid      | 3 female adults, 1 male adult suicide                                  |
| 2             | Mercury and Manganese | 2 male children                                                        |
| 1             | Phenol                | Female adult suicide                                                   |
| 4             | Phosphorus            | 2 female children 2 male children                                      |
| 2             | Zinc Salts            | 2 female adults                                                        |
| 79            |                       |                                                                        |

300. 283 specimens of foods analysed for poisons gave 41 positive results.

| Number | Poison found                                    |
|--------|-------------------------------------------------|
| 2      | Acetic Acid—Suicide cases                       |
| 1      | Ammonia—Liquid used by female suicide           |
| 1      | Antimony—From vomited matter                    |
| 2      | Arsenite of Soda                                |
| 4      | Arsenic and Cresols—3 suicide cases             |
| 6      | Cresols—derived from Mysol—suicide cases        |
| 1      | Copper Sulphate in cooked food                  |
| 4      | Codeine and Strychnine in 4 specimens of pills. |
| 1      | "Dumb Cane" in a liquid.                        |
| 1      | Iodine in a liquid—attempted suicide.           |
| 5      | Mercury in powders, vomited matter and liquid.  |
| 2      | Nitrobenzene in punch                           |
| 2      | Phosphorus in cooked rice and metal tube.       |
| 1      | Permanganate of Potash                          |
| 3      | Powdered Glass in food and milk                 |
| 1      | Phenol in liquid used by female adult suicide.  |
| 4      | Zinc Salts in "Cocktail" and vomit.             |
| 41     |                                                 |

## Court Cases

301. 650 Certificates were issued to the Police during the year. The Government Chemist attended various Circuit and other Courts and gave technical evidence. A meeting of the Customs Tariff Board and the Spirits Control Board were attended. A visit was made by the Government Chemist to the oil installation and samples of the various Petroleum Products imported into the island were taken.

## Sales and Fees

302. The following articles were sold to the Public.

|                                       |             |
|---------------------------------------|-------------|
| Arsenite of Soda .. .. .              | 22,475 lb.  |
| Paranaph .. .. .                      | 19,162 lb.  |
| Standard Iodine Solution .. .. .      | 27,350 c.c. |
| Sodium Bicarbonate .. .. .            | 28 bottles  |
| Carbon Disulphide .. .. .             | 144 lb.     |
| Thymol Powders .. .. .                | 359 packets |
| Rat Poisons (in bulk) .. .. .         | 76 lb.      |
| Rat Poison (in 1 oz. packets) .. .. . | 32 packets  |
| Fly Killer .. .. .                    | 114 gallons |
| Book Poison .. .. .                   | 1½ gallons  |
| Starch Solution .. .. .               | 91 bottles  |

303. Revenue derived during the period 1st April, 1942 to 31st March, 1943.

| Fees      | Sales     | Stamp Duty |
|-----------|-----------|------------|
| £109 12 0 | £953 12 6 | £9 18 0    |



## AGRICULTURAL CHEMIST'S DIVISION

304. Mr. R. F. Innes, Acting Agricultural Chemist, reports as follows:—

### Routine Laboratory Analyses

305. Routine laboratory analysis has been handicapped by the difficulty experienced in obtaining laboratory supplies. Soil analyses constituted the greater portion of the work. Miscellaneous analyses included phosphatic deposits, guanos, waters, fertilisers, feeding stuffs, grasses, preservatives, grapefruit juices, fungicides, cattle-dips and molasses. Half the Laboratory was placed at the disposal of Aluminium Laboratories of Montreal in order to facilitate the Company in its survey of Island Bauxite deposits.

### Soils

306. *The existence of considerable deposits of Bauxite was reported*—These are probably the residue from the  $\text{HCO}_3$  dissolution of Miocene limestone. Two Companies are surveying the deposits.

307. *Highly eroded soils derived from Granite and Seyenite were shown to be infertile because of their extreme phosphate deficiencies.* These soils, though rich in Potash, are very lacking in organic matter and lime.

308. *Crop production on sesquioxide, red limestone soils of the low hills area is limited by inadequate available soil phosphate supplies.* Depth of cultivation is very important on these soils. Care should be taken to keep the subsoil "in situ".

309. Part of the lower Liguanea Plain was surveyed with reference to soluble salts and the relationship between these and vegetation established. The correlation between soil conductivities and Cl' content is very high but the regression co-efficient is not a constant varying with electrical conductivity.

310. *The importance of soil surveys prior to cutting up properties for land settlement was demonstrated* in the case of a large Manchester property where the ratio of arable land to hand cultivable land, to uncultivable land was as  $6\frac{1}{2}$ ;  $4\frac{1}{2}$ ; 20. Land settlement should be based on a land-usage map of the property being parcelled out.

311. Old Alluvia, carbonaceous shale and marine clay soils were examined from a plant nutrient aspect.

### Cattle Dips

312. *The detergent action of 'wetters' in cattle-dips is of doubtful existence owing to their complete precipitation by hard water and introduced soil and organic colloids*—There is no evidence to suggest this to be the cause of the alleged lack of tick control.

### The Nutritive Value of Fodder Crops

313. *Studies on the composition of Uba Cane cut at different intervals over a period of twelve months show its nutritional value to be a maximum in three monthly cuttings and to fall off considerably when cut at greater intervals.*

314. Similar studies, though incomplete, shew Guatemala Grass to be more desirable than Guinea Grass, Uba or Co. 213 sugar canes, as a fodder crop.

### Field Experimentation

315. *THE VALUE OF MULCH ON TERRA ROSSA SOILS*—When rainfall is adequate evidence shows that the value of mulch is primarily manurial—even to the crop to which it is applied.

316. *THE CULTIVATION REQUIREMENTS OF CORN ON TERRA ROSSA SOILS*—No gain is obtained by harrowing and moulding corn more than once, but these operations are not as effective as straightforward mulching.

317. *MANURING WITH SODIUM CHLORIDE ON TERRA ROSSA SOILS*—Applications of sodium chloride to corn are detrimental to yield but applied with mulch result in a very pronounced, significant, positive, interaction. A possible explanation has been offered.

318. *PERMANENT MANURIAL STUDIES ON TERRA ROSSA*—Two factorial experiments were modified to include mulching effects. The quantitative relationship between applications of potash and their residual values after different time intervals has been demonstrated as also has been the outstanding residual value of mulch. The conclusions are based on a rotation of crops.

319. Another factorial experiment was laid out to measure the relative effects of mulch, farmyard manure and potash salts upon the yields of crops and the composition of the soil. The information is required to ascertain the importance to be attached to farmyard manure in the husbandry of Terra Rossa soils. Chemical evidence indicates that fertility of these soils can be maintained, only in the presence of adequate soil organic matter.

320. *CASSAVA*—A factorial experiment with cassava, the results of which will be measured in terms of starch per acre, was laid out. Another experiment with three well known early, medium and late maturing varieties was laid out to find out the relationship between yield, starch content and age at lifting of each variety.

321. *THE MANURIAL REQUIREMENTS OF TRAPPEAN SHALES SOILS—NEWTON FARM*—The importance of applying lime at the rate of 3.0 tons per acre was demonstrated in the field.

322. *THE MANURIAL REQUIREMENTS OF CARBONACEOUS SHALE SOILS, ORANGE RIVER*—Two permanent experiments were laid out with the help of the Officer and the results are in the process of analysis.

323. *THE MANURIAL VALUE OF PHOSPHATIC CAVE DEPOSITS*—Six experiments were laid out on phosphatic deficient soils to measure the manurial value of deposits relative to Superphosphate.

324. *TOMATOES*—Superphosphate was shown to be superior to bol manure on Bull Savannah Terra Rossa soils both in the production of total crop and early fruit for export. Potash, Nitrogen and Compost had no significant effects.

325. *THE EFFECT OF MANURES ON THE COMPOSITION OF MARSH GRAPEFRUIT*—On Potash deficient Terra Rossa, potash increased the bris, sugar, acidity, and Vitamin C content of the juice. On phosphate deficient Inland Basin alluvium, phosphates reduce the total sugars, acidity and Ascorbic acid content of the juice. In both areas, nitrogen reduces the content of Vitamin C in the juice. The popular belief in a difference in the quality of the fruit from the two areas is borne out by chemical analysis.

326. *SUGAR CANE*—Manurial experiments have continued to demonstrate the outstanding effects of potassic manures on acid, inland basin soils and the power of soils to accumulate nitrogen when left to revert to scrub.

327. *Sugar cane variety experiments have shown the outstanding qualities of B. 34104 on medium textured soils free of mosaic, with B. 3439 usually second. B. 3439 however assumes premier importance in Mosaic areas.*

328. *VARIETY EXPERIMENTS WITH PEA-NUTS, SWEET POTATOES AND COW-PEAS*—An experiment with each of these crops was repeated.

### Sugar Factory Reports

329. Sugar Factory Reports for the year were checked, averaged, and re-distributed weekly to all factories.

### Rum Distillery Reports

330. Rum Distillery Reports were initiated with a view to checking distillery efficiencies. Reports were received weekly, checked, averaged, and re-distributed to all factories.

### Report of the Assistant Agricultural Chemist

331. The activities of Dr. H. F. Birch, Assistant Agricultural Chemist have been confined to the operation of the Laboratory and to studies on the use of the Spekker photo-electrical Colorimeter in routine Laboratory analysis. He claims the use of this instrument saves much time and chemicals. Dr. Birch continued his studies on the Inland basin soils and reported the effects of phosphates in these soils. He was involved in experiments on the extraction of banana fibre and served in an advisory capacity to the Citrus pulp industry.

### Miscellaneous

332. The Acting Agricultural Chemist was Secretary to two Committees dealing with chemical and rum distillery problems connected with the sugar industry and was a member of the Executive Committee of the Jamaica Association of Sugar Technologists.

### ENTOMOLOGICAL DIVISION

333. Mr. W. P. Edwards, Entomologist, reports as follows:—

334. During the period under review the Entomologist also fulfilled the duties of Director of the Government Bureau for the Building Industry, directed the Plant Inspection Service, and served on the following Committees—Wild Life Advisory Committee; Revision of Laws Concerning Protection of Fishes; Science Museum of the Institute of Jamaica; Educational Films; Revision of Building Codes and on the one which dealt with Importation, Grading and Storage of Land. Towards the end of the year he was appointed a member of the Board of the Central Housing Authority and Chairman of a Committee to suggest ways and means for merging the Bureau with the Central Housing Authority.



335. As a result of a request from Welfare and Development for the West Indies the Entomologist visited the Bahamas and submitted a report concerning entomology, agriculture, and rural housing.

### Agricultural Pests

336. *Sugar Cane*—On account of transport difficulties annual surveys in connection with the Moth borer *Diatraea saccharalis* had been confined to the variety plots at Hope.
337. *Banana*—Distribution of the predators of the borer *Cosmopolites sordidus* amongst banana planters was continued. *Placcius* was collected from the fields and sent to Trinidad, and a report concerning the distribution of predators in the other West Indian Islands was submitted to the Director of Agriculture for the attention of the Comptroller for Agriculture in the West Indies.
338. *Cotton*—The Geneticist of the Cotton growing Corporation visited Jamaica and eleven experimental plots of Sea Island Cotton were subsequently set up in different parts of the island. Regular visits were made to these plots to ascertain the incidence and relative importance of pests attacking that crop and a progress report on the subject has been submitted.
339. *Miscellaneous*—On account of the special significance of food production, special attention was given to insects attacking food crops, agricultural products during storage and household pests.
- Advice was given concerning control of various insects which were submitted for identification and information. Ticks affecting cattle received particular attention.

### Termites

340. Many buildings which their owners had reported as being infested by termites were inspected and advice given.
341. Observations were continued in the graveyard plot where plastic materials were included in the materials tested.
342. In buildings whose upkeep concerned the Department of Public Works termite control was conducted in such a lamentable manner that the matter was reported to Government and a Memorandum on the subject was submitted to Government for transmission to the Secretary of State for the Colonies.

### Miscellaneous

343. Meetings of Agricultural Instructors, of Forest Rangers, of School Teachers, and of Students were attended for the purpose of conducting demonstrations and lecturing on entomological subjects and matters concerning the building industry.

### Plant Inspection Service

344. Mr. A. L. Reid, Technical Assistant, performed the duties of Plant Inspection as follows:—
- Fruits and Vegetables*—Passed for Consumption in Jamaica 957 packages.
  - Plants and Seeds*—Passed 18 packages. Destroyed 4 packages.
  - Seed Potatoes*—Passed 10,380 barrels (from Canada).
  - Health Certificates issued*—437 certificates were issued.

### Government Bureau for the Building Industry

345. This Bureau continued to conduct its essential objects as defined in the report of the Department of Agriculture for 1941 and with regard to rural housing it worked in close co-operation with the Department of Agriculture, the Jamaica Agricultural Society and with the Lands Department. The Entomologist was relieved of his duties as Director of the Bureau as from 31st March, 1943, when Government decided to make the Bureau a division of the Central Housing Authority.

### BOTANICAL DIVISION

346. Mr. L. N. H. Larter, Botanist, reports as follows:—

The activities of this Division have included the production, propagation and testing of seedling banana varieties, breeding and distribution of seed maize, the maintenance of the national herbarium, and advisory botanical work generally.

#### Banana Breeding

348. *General*—Climatic conditions were again favourable for the setting of seed and 2.39 seeds per pollinated stem reaped were obtained as against 2.03 in 1941. Weather disturbances were few and the loss of pollinated fruit from this and other causes amounted to 7.6%. As compared with 1941, 10,521 stems were pollinated as against 7,845; 18,935 seed were obtained as against 14,125; and 20,411 seedlings germinated as against 2,917 in 1941.
349. The total experimental acreage remained approximately the same. Certain *Gros Michel* plots have been abandoned owing to the encroachment of Panama disease but these have been replaced by new areas. Two new seedling variety trials have been laid down.
350. *Breeding Lines*—No radical modification of breeding policy has been made. Established primary crosses between *Gros Michel* and wild *Musae* have been continued and a limited number of crosses between *Gros Michel* and *M. rubra* and an unidentified species from New Guinea have been carried out. Again, a limited number of back-crosses have yielded a few seedlings of no commercial promise.
- Between primary tetraploid (F1) seedlings have been increased, approximately seven thousand stems being pollinated. A proportion of promising seedlings in these families has proved small, but one or two outstanding seedlings have been obtained. Multiplication of parental material for F2 families has still not yet proceeded far enough to enable more than a few F3 families to be produced; these so far have proved unpromising, but larger families are required before their value can be assessed.
- 351 new seedlings, 647 are derived from primary crosses between *Gros Michel* and wild diploids, 2,022 are secondary crosses and the balance are derived from F3 and back-crosses.
- 352 seedlings died prior to planting out, 364 high polyploids have been discarded and 1,415 new seedlings have been obtained as against 707 in 1941. The first fruit of 442 new seedling varieties has been reaped and 37 preliminary selections have been made for further trial.
- 353—Seed of *M. ulugurensis* and *M. Livingstoniana* was received from Trinidad for trial for fibre purposes but failed to germinate.

355. *Variety Trials*—Trials of seedling varieties in progress last year have been continued into the ratoon crops. Plant crop data, now in process of analysis, has emphasised the value of such trials in revealing hitherto unobserved physiological differences between seedling varieties. Two new trials have been laid down to study the differential action of fertilisers on seedling varieties and further trials of this type are contemplated. Routine testing of all seedling varieties for resistance to Panama disease is being continued.

#### Maize Breeding

356. Considerable progress has been made towards the replacement of native red corn by locally bred yellow varieties suitable for meal manufacture. Climatic conditions were usually favourable during 1942 and good yields were obtained even in irrigated areas where in a wet attack is liable to prove the limiting factor. Work is proceeding on the lines of mass selection and averages for seed production of J.S.Y. corn have been increased from 45 to over 200. This has enabled a more rigid selection to be carried out and at the same time a larger area of seed corn has been produced. The yield of 1942 and 510 bushels for the Spring planting of 1943. Planters were reluctant to purchase in 1942 but the supply was insufficient to meet the demand for the current crop; it is expected that this demand will rise to 1,000 bushels per crop by next year.
357. The percentage of dark coloured grain has been reduced to 4.5 and then to less than 1.5 and should be virtually eliminated within a year.

358. The percentage of grain which is not available for distribution has been reduced to 1.5 and should be virtually eliminated within a year.

359. Variety trials have been continued as a check on selection work and the yielding capacity of the new varieties has been determined.

Inbreeding of selected strains has been continued on a small scale and the number of the better strains have been topcrossed to the J.S.Y. variety; the progeny of these crosses is being tested this crop and a number of inbreds are being intercrossed.

Damage to young plants in dry areas has been minimised by regular spraying; damage to older plants has been reduced by the use of insecticides.

Damage to grain in the field has been reduced by the use of insecticides, slight, birds and rats being the chief causes of loss. Damage from other causes e.g., smut, rust, and other diseases, stalk rot, weevil and pentatomids etc. was negligible.



## Miscellaneous

362. The national herbarium has been housed in a new extension to the buildings of this Division and is in process of re-organisation. The volume of plant identification work has increased considerably and collections and investigations of native plants of potential commercial importance have been carried out, particularly in relation to the present fibre and drug shortages.

363. The Botanist again acted as local examiner for the University of London Intermediate and Final Practical Botany examinations.

364. An article has been published in the Journal of the Jamaica Agricultural Society on the production and use of seed corn, and a preliminary list of Plant Diseases in Jamaica has been prepared for publication in conjunction with the Plant Pathologist.

365. The thanks of the Department is again due to the owners and staffs of the many organisations who have co-operated by the provision of land and supervision of the field work of this Division and without whose able assistance it would have been difficult to carry on.

## PLANT PATHOLOGICAL DIVISION

366. Mr. E. B. Martyn, Plant Pathologist, reports as follows:—

## Bananas and Plantains

367. *Panama Disease*—Owing to travelling restrictions it was not possible to repeat the surveys made last year. Large properties continue to fight the disease, but small farmers have tended to be apathetic owing to the prevailing unfavourable market conditions. The Agricultural Instructors however endeavour to see that control measures are carried out, at least in areas where the disease is not yet widespread. In the absence of Gas oil, treatment now resolves itself into cutting down and chopping up infected plants 'in situ', treating 'followers' similarly, and otherwise leaving the affected spot as far as possible undisturbed. The use of lime and fire are often impracticable, and the former of little value.

368. *Speckle*—It has now been ascertained that while the marked black speckling of Banana leaves is due to *Chloridium musae* Stahel, a more diffuse type, not so clearly visible on the leaf, but equally widespread, is due to *Hormodendron musicola*. (In addition *Zygophiala jamaicae* (n. sp.) is consistently found as an epiphyte on Banana leaves, in association with speckle.)

269. *Leaf Spot*—The Leaf Spot Mycologist has noted the occasional occurrence of *Cercospora musae* (*Mycosphaerella musae*) causing spotting on old leaves of Plantain (*Musa paradisiaca*) surrounded by heavily infected Bananas.

## Coconuts

370. *Bronze Leaf Wilt* continues to cause the death of Coconuts on the North West Coast, but is confined to the same area as heretofore. The very wet year resulted in water logging and consequent yellowing of Coconuts in a number of districts, especially where these were on abandoned banana land, on which the drains had been neglected. Being in some cases mistaken for Bronze Leaf Wilt, unnecessary alarm resulted.

## Sugar Cane

371. *Pokkah Boeng* became evident on some of the Barbados seedlings and a number of cases in St. Thomas caused concern to planters until their harmless nature was realised.

## Citrus

372. *Greasy Spot* appeared to be quite common on grapefruit and was also seen on Orange. On one property it became especially noticeable during the late summer. *Die Back* and *Yellowing* of trees were observed in several cases. Sometimes *Botryodiplodia bromae* was found in the tissues, in others a heavy subsoil and consequent poor root formation affected the trees in dry weather. An experiment was tried with some affected trees to induce new root development by ringing or wiring the base of the tree and earthing up.

## Potatoes

373. *Late Blight*, *Phytophthora infestans*, caused rather heavy losses in upper Manchester after some cold nights during rain weather in April.

## Legumes

374. In addition to the normal Mosaic of Red Peas (*Phaseolus vulgaris*) and of Mung Bean (*Phaseolus aureus*) and various varieties of *Vigna unguiculata*, what appears to be a form of hereditary chlorosis is seen quite commonly on the Sugar Bean (*Phaseolus lunatus*). Various forms of nutritional chlorosis were noticed on Cow Peas, Soja Beans and Pea-nuts.

375. *Anthraxnose* of Soja Beans—*Glomerella glycines* (Hori) NN caused damage to pods ripening in wet weather. The fungus causing this common complaint had not previously been diagnosed in Jamaica.

376. *Congo Peas* (*Cajanus indicus*) when making rapid growth, as young plants, on heavy soil, proved liable to a temporary *die back* apparently as a result of retarded transpiration, on occasional hot dry days during a wet period.

## Sisal

377. The fungus causing the sooty black spots on the leaves was found to be a species of *Piline*.

## Cotton

378. Experimental plots of this crop were cultivated in a number of parts of the Island. Anthracnose, *Colletotrichum gossypii*, occurred on all of them, but was not serious. Rust, *Cerotelium gossypii*, was found on one plot, and Areolate Mildew, *Ramularia areola*, was very prevalent at Newton Farm, where conditions are extremely humid. A promising crop at Hope lost a lot of Bolls by 'dropping' in late December and early January.

## Newly Recorded Diseases

379. The following are some of the diseases recorded for the first time in Jamaica.

Avocado Pear, Leaf Spot, *Cercospora purpurea* Cooke; Cabbage, Leaf Spot, *Cercospora brassicola* P. Henn.; Cannas, Leaf Spot, *Helminthosporium* sp.; Celery, Early Blight, *Cercospora apii* Fr.; Cocos (Colocasia spp.) and Indian Kale, (*Xanthosoma* sp.), Leaf Scorch, *Phyllosticta* sp.; *Datura suaveolens*, Leaf Spot, *Cercospora* sp.; Guatemala Grass, Mosaic; Lettuce, Leaf Spot, *Cercospora longissima* (Cug.) Sacc.; Loofah, Fruit Rot, *Macrophoma* sp.; Okra, Leaf Spot, *Cercospora malayensis* Solh. and Stev.; Sweet Potato, Leaf Spot, *Phyllosticta batatas* (Thum.) Cooke.

## Imperial Mycological Institute and Publications

380. Thanks are due to the Institute for identification of a number of fungi submitted and for assistance with a list of Jamaican Plant Diseases submitted for publication.

381. Bulletin 32, 'Diseases of Plants in Jamaica', was published during the year for the use of Agricultural Instructors, Land Settlement Officers, Teachers etc.

## BANANA LEAF SPOT CONTROL DIVISION

382. Mr. H. H. Croucher, Leaf Spot Control Officer, reports as follows:—

383. The work of the Division in conducting experiments in methods of Banana Leaf Spot Control and for the general improvement of banana cultivation, has been continued. The Division is responsible for the operation of two Agricultural Stations which were primarily acquired for experiments with bananas. Present circumstances of which the chief were the importance of food crops and their production, and the increasing activities of the Department, resulted in these Stations being used more and more for experimental and administrative work of all aspects of agriculture.

384. Panama Disease affected the Stations seriously and interfered with the results of many experiments. There was sufficient time for the main spraying experiments to be concluded but the results of manurial and spacing experiments on bananas were not satisfactory, though tentative conclusions can be drawn. Experiments were laid down with banana varieties immune to Panama Disease and Leaf Spot.

385. There was little change over previous years in the incidence of Leaf Spot Disease. The intensity in the eastern parishes of the Island increased somewhat. There are still small individual areas on the slopes of the Blue Mountains and in shaded valleys where satisfactory fruit is produced without control by spraying.



386. Experiments in the use of mixtures other than Bordeaux and in the use of supplementary substances such as Wetters and Stickers have been curtailed by the difficulty in obtaining materials. The difficulty of controlling spraying by Perenox through poor visibility has not been overcome. On the irrigated plains, however, spraying is undertaken almost entirely mechanically. There was a change from Bordeaux to Perenox resulting in equal control and less wear and tear on equipment.

387. The functions of the Division involving the control of spraying equipment and materials issued by the Banana Leaf Spot Control Board have, as far as possible, been separated from the investigational work of the Division.

388. The report on the progress of spraying is contained in the report of the Board. Routine inspections of depots and materials have been made by Officers of the Division.

389. Mr. J. R. V. Smyth, Senior Agricultural Officer, who is responsible for operations in the Western Section of the Island reports as follows:—

390. *Field Supervision*—This has been carried out under the control of a local Leaf Spot Committee, comprised of representatives of the three Fruit Companies, by a Senior Supervisor, and Field Staff working in conjunction with the Spraying Instructor and Agricultural Society's Instructors.

391. *Depots*—At the beginning of April, 1942, eight depots were being operated at the Railway Stations from Anchovy to Appleton, inclusive, and under the management of the Station Masters, two depots operated by the Banana Leaf Spot Control Board in Montego Bay and Lucan and two operated by the Leaf Spot Committee at Summer Hill and Green Island. During the year the Depots at Appleton and Maggoty were closed—and three additional sub-depots opened under the supervision of the Leaf Spot Committee—making a total of thirteen depots in operation at the end of March, 1943. Regular monthly inspection, were carried out by the Spraying Instructor.

392. *Equipment*—Twelve different types of spraying equipment were in use during the year. The Leaf Spot Committee service these units in the field, when possible, and at their work shop at Montego Bay; spare parts are supplied by the Head Store Keeper, Kingston, through the Senior Agricultural Officer, Western Division. All transfers and withdrawals of equipment are effected and reported on by the Leaf Spot Committee.

393. *Materials*—The quantity of materials drawn for the year indicate, when compared with the number of contractors registered, that a large percentage were not drawing materials regularly. Those who drew regularly, however, show encouraging results for their efforts.

394. *Reductions*—During November, 1942, materials were reduced from 10 lb. each Copper Sulphate and Lime per acre, to 10 lb. Lime and 8 lb. copper sulphate per acre.

395. *Leaf Spot Incidence*—The incidence of infection in unsprayed areas during the year under review, appears to have been at its lowest point during the months of April and May, increasing in intensity during the month of June and reaching the highest point in November and December, declining again in January, July and March, to stage between a moderate and heavy infection. Growers who sprayed regularly maintained commercial control.

396. *Spraying Activities*—Spraying activities among small growers cannot be considered entirely satisfactory, as very little spraying was carried out by them during the early part of the year, due to the reaping of canes, planting and reaping of yams and adverse weather conditions. General improvement was, however, noticed during the months of October and November, but this did not continue. This lack of interest was generally believed to have been caused by the uncertain condition of the Banana Trade, at this period. The Leaf Spot Mycologist visited the division in February, in connection with the institution of regular summer spraying campaign to be started in March and this bids fair to be successful and many growers are clearing and preparing their fields.

397. *Hydration*—Owing to war conditions, local burnt lime supplied by the West Indies Sugar Company, has been utilised in place of imported lime and the necessary work of hydration has been carried out at Montego Bay, for supplying all the Depots in the division. Additional shipments were made to Oracabesa, in St. Mary. The total quantity hydrated was 345 tons.

398. *Contractors*—At the end of last year approximately 1,300 contractors were registered; 292 new growers registered during the year: over 300 cancellations took place, leaving a total of 1,271 contractors registered at the end of March, 1943. Of these some 488 only drew supplies of materials during March, 1943.

## Mycological Work

399. Mr. R. Leach, Mycologist, reports as follows:—

400. The main investigations carried out during the year were related to ascospore infection by *Mycosphaerella musicola* and its importance as a factor in determining the efficiency of spraying in different seasons and districts. In the 1941 report mention was made of the difficulty experienced in obtaining satisfactory control of leaf spot in the winter unless adequate control had first been obtained in the previous summer, owing to the seasonal incidence of perithecial production between August and January.

401. An extensive study has been begun to estimate the amount of perithecial production in the spots of bananas growing on the various types of soil throughout Jamaica. The interpretation of results is not as straightforward as it would at first appear, due to the following contingencies. Individual spots are not uniform at maturity and can be sub-divided into the following types: (a) broad spots surrounded by a dark ring of gum, (b) broad spots with a light ring, (c) thin narrow spots and (d) diffuse spots without ring. Perithecia tend to be formed in increasing numbers from types (a) to (d). The type of spots depends largely on the age of the leaf when the spot is formed. Individual spots within a mass of spots tend to produce more perithecia than separate individual spots. The type of infection therefore tends to complicate an estimate of perithecial production. In general the most suitable part of the leaf in which to search for perithecia is in a heavily spotted (scorched) area.

402. The most important observation made during the year was the association of abnormally heavy ascospore infection on certain soils during the season when ascospore infection is normally at a minimum i.e., between March and August. The best example occurred in a field of bananas in which the pH of the soil varied greatly. Although the field had been uniformly sprayed every three weeks with 4-1-10 Bordeaux the bananas growing on the highly acid parts of the field were extremely heavily infected in the summer while those within 80 yards growing on less acid soil were under excellent control. The spotting on the acid soils was typical of normal, winter "tip spotting" caused by ascospore infection. Subsequent observations have shown that the leaf spots of bananas grown on the highly acid soils of Jamaica tend to produce perithecia abundantly through the year, thus accounting for the planters' experience of difficulty in obtaining satisfactory control on such soils. The normal metabolism of the banana plants must in some way be altered to such an extent on these soils that the metabolism of the parasite (*M. musicola*) is likewise affected.

403. Soil moisture conditions appear to play a part; the heavy, poorly drained, clay soils appear to give rise to an excessive production of perithecia in the normal ascospore season.

404. Experiments have been started to test whether an application of lime on to the highly acid soils will restore the normal metabolism of the banana leaves. The results are not encouraging which indicates that the problem is not a straight forward case of acidity or lime deficiency. This is also shown by the abundant production of out of season perithecia very occasionally on highly alkaline soils of poor fertility. Apart from an estimation of the pH values of various soil samples taken in connection with this work, the Agricultural Chemist suggested and carried out analyses of the phosphorus content of the various soils and of leaves taken from bananas growing on them because the variable availability of this element is having a marked effect on the growth of several economic crops in Jamaica. No relationship, however, has been established between the quantity of this element in the soil or plant and the abnormal production of perithecia.

405. The whole subject of the effect of soil conditions on perithecial production in banana leaf spot is not only of academic interest but is of the utmost importance in regard to spraying schedules. These, in Jamaica, aim at reducing conidial infection by consistent spraying in the summer; spotting is then so negligible that the output of ascospores is unable to be increased to unrestricted proportions by the end of the ascospore season and serious winter infection is thus avoided.

406. In brief any soil condition which tends to unbalance the normal metabolism of the banana leaf would also seem to encourage an abnormal production of perithecia. The problem is full of interest and can only be satisfactorily solved by joint research between soil chemist, plant physiologist and plant pathologist.

407. Other work carried out during the year has been connected with (1) the routine experiments, still in progress, relating to the effect of leaf spot disease on the banana plant, (2) observations on the seasonal variation in disease intensity and the climatic conditions responsible, (3) a campaign to instil more knowledge of the problem of leaf spot control into the minds of the more progressive growers, with special reference to the importance of more consistent summer spraying.

408. I wish to express my gratitude to all those members of the Department of Agriculture who have co-operated again with the work of leaf spot during the year, especially to Mr. R. F. Innes, Agricultural Chemist, Mr. W. K. Mitchell, Assistant Agricultural Officer, and his assistant Mr. L. B. Rhoden and also to my laboratory assistants Mr. A. G. Naylor and Mr. L. C. Freeman for all the help given in the experimental work.

## PUBLICATIONS

409. The following departmental publications were issued during the year ended 31st March, 1943:—

Bulletin No. 31 (New Series)—"A Survey of the Yields of Sugar Cane in Jamaica 1940-1941"—Report by R. F. Innes, Agricultural Chemist.

Bulletin No. 32 (New Series)—"Diseases of Plants in Jamaica"—By E. B. Martyn, Plant Pathologist.

Pamphlet—"Banana Leaf Spot: When to Spray and Why".

Annual Report of the Department of Science and Agriculture for the year ending 31st March, 1942.



## SECTION III—LEGISLATION

410. The following laws relating to Agriculture were passed during the year:—

| No. | Date Assented to | Short Title                                                     | Chief Provisions                                                                                                                                                                                             |
|-----|------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26  | 12.5.42          | The Fertilisers and Feeding Stuffs Law, 1942                    | To control the sale of Fertilisers and Feeding Stuffs by providing that the seller should give to the purchaser written statement containing particulars as to the name and composition of the article sold. |
| 46  | 26.5.42          | The Banana (Leaf Spot Control) (Amendment) Law, 1942            | To enable funds provided by the Imperial Government to be employed for purposes of Leaf Spot Control.                                                                                                        |
| 49  | 29.7.42          | The Sugar Industry Control (Amendment) Law, 1942                | To provide that the licensing of manufacturers and the registration of cane farmers should continue with certain modifications.                                                                              |
| 51  | 29.7.42          | The Country Fires (Amendment) Law, 1942                         | To make the Country Fires Law, 1942 (No. 8 of 1942) applicable to the urban and suburban districts of the Corporate area.                                                                                    |
| 52  | 29.7.42          | The Cane Farmers (Incorporation and Cess) (Amendment) Law, 1942 | To provide that the financial year of the All-Island Jamaica Cane Farmers Association shall coincide with the calendar year.                                                                                 |

G. A. JONES,  
Director of Agriculture.



## APPENDIX I

## AGRICULTURE IN THE TURKS AND CAICOS ISLANDS

411. Mr. H. T. Carrington, Agricultural Officer, reports as follows:—

412. *Weather*—The total rainfall for the year was 42.14 inches and the seasonal index was 7.6. The total for last year was 54.49 inches. In December and January 1.98 inches were recorded. These months are the most important for the winter crop of corn which is harvested in February.

413. *Cultural Experiment*—The yields of the plots in lb. corn on cob per acre for the summer crop of 1942 were as follows:—

| Block | Treatments |       |       |       |
|-------|------------|-------|-------|-------|
|       | A          | B     | C     | D     |
| 1     | 1,080      | 2,080 | 1,560 | 1,200 |
| 2     | 2,040      | 2,440 | 1,920 | 2,160 |
| 3     | 1,720      | 2,200 | 2,040 | 1,960 |
| 4     | 1,880      | 2,080 | 2,240 | 1,680 |
| 5     | 1,240      | 1,800 | 1,600 | 1,640 |
| Means | 1,592      | 2,120 | 1,872 | 1,728 |

The yields for the winter crop 1942-43 were as follows:—

| Block | Treatments |       |       |     |
|-------|------------|-------|-------|-----|
|       | A          | B     | C     | D   |
| 1     | 680        | 920   | 880   | 800 |
| 2     | 800        | 1,040 | 1,000 | 760 |
| 3     | 1,040      | 1,120 | 1,200 | 880 |
| 4     | 600        | 840   | 840   | 680 |
| 5     | 440        | 760   | 400   | 640 |
| Means | 712        | 936   | 864   | 752 |

414. *Description of Treatments*

- A. Native method
- B. Thorough cultivation but no manure
- C. Stumping, removing all surface stones
- D. Stumping, removing no stones

415. These two harvests uphold the superiority of thorough cultivation and prove that burning the land causes the soil to retrograde rapidly although burnt land gives a superior crop for the first period. These facts suggest that the local soil is deficient in potassium and this hypothesis is borne out by soil analysis.

416. *Mulching Experiment*—Ten plots were laid out in a simple mulching experiment. Five of the plots were mulched at the rate of 14 tons of bush per acre and the other five were left bare. The ten plots were planted with corn. The yields of the plots were as follows:—

| Block | Mulched | No Mulch |
|-------|---------|----------|
| 1     | 1,980   | 1,548    |
| 2     | 2,088   | 1,764    |
| 3     | 1,764   | 1,476    |
| 4     | 1,944   | 1,548    |
| 5     | 2,088   | 1,656    |
| Means | 1,973   | 1,598    |

Mulching is therefore proved to be definitely beneficial.

417. *General*—At Lorimers, Bombarra, Conch Bar and Kew the summer crop of 1942 was satisfactory. The winter crop of 1942-43 on account of lack of rain at the crucial period (as mentioned above) was below expectation. On account of war conditions farmers were persuaded to extend their cultivations.

418. The onion crop was most satisfactory at Kew and Bottle Creek.



## APPENDIX II

### SUGAR CONTROL BOARD

### ANNUAL REPORT 1942-1943

#### Production

Production of sugar in the 1941-42 crop was somewhat below that of the previous year which was a record crop. The production figures for the 1941-42 crop are as follows—

|                                      | tons    |
|--------------------------------------|---------|
| Sugar Exported .. .. .               | 88,696  |
| Local Consumption .. .. .            | 17,033  |
| Total Production .. .. .             | 155,263 |
| Muscovado Production .. .. .         | nil     |
| On hand at end of quota year .. .. . | 49,534  |

The whole of the 1941-42 production of sugar exclusive of that required for local consumption was purchased by the Imperial Government. 2. The total number of registered cane farmers amounted to 10,094 who produced 38% of the total cane milled. 8,134 farmers delivered cane. The Island average tons cane per ton commercial sugar was 10.17.

#### Amendments to the Sugar Industry Control Law

3. The Sugar Industry Control Amendment Law 1938 provided for the registration of cane farmers up to and including the 1942 crop only. Further legislation was necessary therefore to provide for future registration. Experience had shown that the Law required amendment in other respects. Following recommendations by the Sugar Control Board the Sugar Industry Control (Amendment) Law of 1942 was introduced and passed by the Legislative Council. Under the amended law the Sugar Control Board has power to register cane farmers and to cancel and exchange registrations. The conditions for licensing and regulating deliveries by cane farmers were revised. Provision was made for special licensing of farmers supplying any particular factory which had reached capacity. The delivery by a registered farmer of cane grown by an unregistered farmer was prohibited.

4. As a result of the revision of the Sugar Industry Control Law, it became desirable to amalgamate all previous regulations passed from time to time under the Law, and the Sugar Industry Control Regulations 1943 were accordingly made by the Governor in Privy Council on the 22nd of March, 1943.

#### Registration of Cane Farmers

5. The general conditions for the registration of cane farmers continued to operate up to December, 1942, though some factories were unable to accept new registrations having reached capacity. The Sugar Control Board discouraged planting of cane at uneconomic distances from factories by refusing to register new farmers whose cultivations were beyond a specified distance from the factory.

6. In December notification was received that the Imperial Government would purchase for the 1943-44 crop a tonnage of sugar not exceeding the 1942-43 production. Registration of new farmers was, therefore, discontinued, except in the case of farmers who had previously made deliveries through registered farmers provided the registered farmer would agree to allocate to the unregistered farmer the amount he previously delivered on his behalf, and have his own deliveries reduced proportionately. The Sugar Manufacturers agreed to accept all canes of good quality delivered to them by registered farmers, and licensing was unnecessary. Cane growers were notified through the Press and otherwise that the planting of cane should on no account be increased. The system of indexing and recording cane farmers and their deliveries was revised.

#### Scales

7. Registration of scales used in the purchase of sugar cane was continued under the law and new certificates issued for scales replaced. Scales were inspected by the police.

#### Cane Prices

8. The enquiry into the price of cane which the Sugar Control Board had been instructed by Government to hold was completed. Investigations covered the 1939-40 and 1940-41 crops. Majority and Minority Reports were sent to Government with recommendations as to a basis of payments for cane farmers' canes to be fixed by the Governor in Privy Council. As a result of the recommendations in the Majority Report, the Sugar Cane (Minimum Price) Orders of 1942 and 1943 were made by the Governor in Privy Council on the 16th November, 1942 and the 22nd March, 1943 respectively. These orders provided for payment to be made to farmers on the basis of the average sucrose content of all canes delivered at a particular factory during the crop, and on the average sucrose for the crop of canes supplied by an individual farmer or group of farmers.

9. As a result of an enquiry into the price of cane, sugar manufacturers were urged to adopt a uniform system of accounting. Proposals were prepared by the Sugar Manufacturers' Association, and steps were taken for the adoption of the system by factories as early as possible.

#### Cess

10. The Sugar Control Board collected the cess on behalf of Government for payment to the All-Island Cane Farmers' Association. The amount of the cess was fixed at one penny per ton cane purchased.

#### Attendance at Meetings

| Attendance at Meetings                     | Number of Meetings |
|--------------------------------------------|--------------------|
| Hon. G. A. Jones (Chairman) .. .. .        | 8                  |
| Hon. R. B. Barker, (Vice-Chairman) .. .. . | 9                  |
| Hon. A. B. Lowe .. .. .                    | 9                  |
| Mr. J. G. Kieffer .. .. .                  | 9                  |
| Mr. P. E. N. Mortimer .. .. .              | 8                  |
| Mr. U. T. McKay .. .. .                    | 8                  |
| Mr. D. J. Verity .. .. .                   | 9                  |
| Mr. J. A. Tannock .. .. .                  | 9                  |
| Mr. H. H. Croucher, (Secretary) .. .. .    | 9                  |

H. H. CROUCHER,  
Secretary.







